



## PHD

**How do I create my own educational theory in my educative relations as an action researcher and as a teacher?**

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**How Do I Create My Own Educational Theory  
in My Educative Relations  
as an Action Researcher and as a Teacher?**

Submitted by James Finnegan  
for the degree of PhD  
of the University of Bath  
2000

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A handwritten signature in black ink, reading "James Finnegan". The signature is written in a cursive style with a large, stylized 'J' and 'F'.

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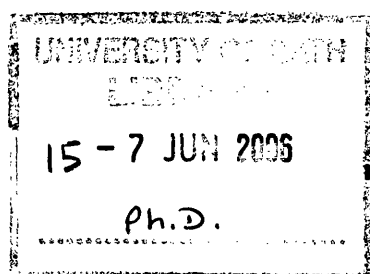
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## **Abstract**

### **How do I create my own educational theory in my educative relations as an action researcher and as a teacher?**

My enquiry is based on four qualitative studies [1994-1997] in a boys' secondary school in the Republic of Ireland. I adopt a living educational theory approach to action research in my study.

In creating my own educational theory, I demonstrate how I have become a more reflective educational action researcher in developing and defining an original set of standards of judgement for judging my action research and teaching practices. These include my methodological, educational, and social standards of judgement.

In helping to facilitate an expression of student voices in my teaching, as I seek to improve their learning, I enable my sixth form students and myself to engage in more democratic actions and more egalitarian power relations in the classroom, primarily through the elicitation/creation, greater enactment, and evaluation of teaching/learning communicative activities. In this, 'How can I help you to improve your learning?' is a question worth asking my sixth form students.

My work also shows that I have become a more reflective practitioner as I dialogue with the writings of other educators whilst seeking to relate my values concerning democratic action and social justice to my classroom teaching.

*For Livinia*

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## Acknowledgements

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I especially mention the sixth form students Ronan, Eoghan, Kenneth, Kieran, and Donagh who also acted as 'critical friends' during the 1995 study.

I thank the following 'critical friends' - all teaching colleagues: Paraig O' Dowd (St. John's College) [1994], Joe English (St. John's College) [1994 and 1995], Paraig Cannon (local primary school) [1996], Breid Carberry and Ann Carroll (local convent secondary school) [1997].

I thank the following key respondents of my written accounts: Ben Cunningham (Marino Institute of Education, Dublin), Jim Callan (National University of Ireland, Maynooth), Joe English (St. John's College), and Billy Ward (Deputy Principal at the local convent secondary school) [1994], Pat D'Arcy (Independent Action Researcher, based near Bath) [1998], Kate Hawkey (University of Bath) who acted as a Reader for the first main draft of my thesis [1999], Hugh Lauder (University of Bath) [1997-2000], and Jack Whitehead (University of Bath) [1995-2000].

I thank the University of Bath Action Research Group who meet every Monday and who on several occasions gave time and energy to listen to me and challenge me on my work.

I thank in a very special way Jack Whitehead, Hugh Lauder, Rob Millar (University of Ulster), Ben Cunningham, Pat D'Arcy, and Moira Laidlaw (Teacher and Independent Action Researcher, based in Bath) for helping me shape this final draft of my thesis.

## Foreword

### **How do I create my own educational theory in my educative relations as an action researcher and as a teacher?**

My thesis has emerged from trying to help Leaving Certificate sixth form (17-18 year-old) chemistry and mathematics students to improve their classroom learning in four singularity studies<sup>1</sup> that occurred in 1994, 1995, 1996, and 1997 in a boys' secondary school, St. John's College, a Catholic diocesan school [740 students and 45 teaching staff] in the northwest of the Republic of Ireland. The themes of creating my own educational theory, democracy, social justice, and greater appreciation of a sixth form student's conceptual vision, emerged in an a posteriori fashion from my teaching and action research practices. These themes influenced the kind of literature I chose to engage with and the reader will meet most of this literature, as well as other literature, cumulatively, throughout the course of my thesis rather than predominantly in Part One<sup>2</sup>.

Locating more precisely my research stance, I adopt a living educational theory approach (Whitehead, 1993) to action research in my enquiry and create my own educational theory. I create my own educational theory in the descriptions and explanations of my own learning and educational development as I ask, research, and respond, in particular, to the question, '*How can I help you to improve your learning?*' (Laidlaw and Whitehead, 1995: p. 2). Following Whitehead (1985, 2000), the idea that my educational theory is 'living' is grounded in:

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<sup>1</sup> I define studies of singularities in Chapter Four (pp. 57-58).

<sup>2</sup> Such a stance is supported by Green's (1999) assertion that it is now more commonly accepted within the action research tradition that '*the literature needs to permeate each chapter of the thesis rather than being predominantly bound within any kind of literature review*' (Green, 1999: p. 110).

*'I' as a living contradiction<sup>1</sup> and the idea that individuals (can) produce valid explanations for their own learning. The idea of 'living' theories (is) further reinforced by the idea that the explanation for an individual's present practice - include(s) an evaluation of the past practice and an intention to create something better in the future which the individual (is) committed to working towards. (Whitehead, 2000: p. 97)*

Valid explanations for my own learning are proffered in terms of values I attempt to live out more fully in my action research and teaching practices. These values are not static but are informed by my developing understandings of my practices in dialogue with others - students, critical friends, key respondents, and researchers in the literature. Importantly, these values also constitute an original set of standards of judgement for judging my work and my claims to knowledge [Chapter Three (pp. 45-56)].

In Chapter Two of my thesis (**Part One**), I argue a case for my right, as a teacher and as an action researcher, to create my own educational theory. This provides a political strand of argumentation in my work towards the beginning of my thesis. In **Part Two**, I focus on more democratic actions. In **Part Three**, I focus on more socially just actions. In **Part Four**, I focus on gaining a greater appreciation of a sixth form student's conceptual vision in mathematics. In **Part Five** I address the question, 'What's in My Work for Others?'

By 'educative relations', I mean the ways in which I relate educationally to my self, my sixth form students, critical friends, key respondents, and researchers in the literature. Finally, in focusing on creating my own educational theory in my educative relations *as an action researcher* and *as a teacher*, as well as valuing what is known, I place an appropriate epistemological emphasis in my work on my particular way of knowing.

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<sup>1</sup> Here, it is important to appreciate that Whitehead does not mean that 'two mutually exclusive statements are true simultaneously' but rather that one experiences oneself 'holding together two mutually exclusive opposites' (Whitehead, 1999: p. 1).

### *A Recommendation to the Reader*

As a possible ‘ideas formulation’ exercise in appreciating my work and who I view as my potential audience, I think it will be helpful to the reader, at this juncture, to read Section 3 of my final chapter [pp. 277-281], where I address the question, ‘What’s in My Work for Others?’. I address this question in my final chapter rather than here because of the chronological and logical way in which the question arose in my enquiry. However, I feel the reader’s acquaintance with the content of the above from early on in my thesis will enhance the reader’s understanding of my work. A central point to appreciate is that the following seven related areas constitute my educational theory:

1. Democracy and Teaching/Learning Communicative Activities.
2. Social Justice and Helping the Most ‘Disadvantaged’ Students.
3. A Sixth Form Student’s Conceptual Vision in Mathematics and Some of Vygotsky’s Work.
4. Relevance in an Irish Context.
5. Creating My Own Educational Theory.
6. A Particular Living Educational Theory Study and Standards of Judgement.
7. Social Philosophy Informing My Fuller Understanding of My Educational Practice.

Also, before beginning Part One of my thesis, I think it will be useful for the reader to view the contents of page 294 to get an idea of how I have structured the Appendices.



## **Chapter One: Setting the Scene**

In Chapter One I wish to provide some contextual background information and share with the reader some of my beliefs, attitudes and values when beginning action research in February 1994.

I address the following four areas:

1. A Note about Myself
2. My Students, My School and My Teaching
3. A Short Autobiographical Account Regarding My Involvement in Three Approaches [Mathematics and Chemistry, Guidance and Counselling, and Beginning Action Research]
4. Wisdom of Practice and the Knowledge Base of Teaching / Relevance in an Irish Context

## **Part One**

### **1. A Note about Myself**

I was born in Dublin, Republic of Ireland, in 1952, moved to Dundalk (a town on the coast, north of Dublin) in 1961 and then to Ferbane ('white grass' - after the local bog cotton), a village in the midlands, in 1965. There were eight children in our family, five boys and three girls, and I am the second eldest. My brother, aged four, died in 1964 (knocked down by a car) and my father, aged 61, died in 1986 (a sudden heart attack). The priorities when growing up seemed to be food, learning, and then clothes. As we got better off financially we got new shoes and new clothes more often and our interest in education never deteriorated. Both of our parents were good to us and made considerable self sacrifice in helping to nurture a reasonable degree of love and outward attitude. I thank them.

I went to College in Galway on the west coast of Ireland from 1970 until 1975 studying mathematics (minor) and chemistry (major), obtaining a research degree in chemistry in September 1975. After giving up a further postgraduate research degree in chemistry at the University of British Columbia in Vancouver I taught Native Americans in an elementary school in Vancouver Island during 1975/1976, returning to the University of Galway to graduate with a Higher Diploma in Education in 1977. In June 1977 I got a job teaching mathematics and science and health education in St. John's College, a boys' secondary school (a grammar school) in the northwest of the Republic of Ireland, and have been teaching there since September 1977. It is now Tuesday, January 6th, 1998: I am on study leave until September 1999 with the intention of writing up a doctorate in education. I would now like to say something about my students, my school and my teaching.

## **Part One**

### **2. My Students, My School and My Teaching**

St. John's College is a boys' Catholic diocesan secondary school with 740 students and 45 teaching staff with a priest as president of the college. There is one other priest on the staff. Most of the students come to school by bus and car. Some students walk to school and no student cycles. There used to be a number of boarding students at the college but these were phased out gradually, the boarding section closing eight years ago, a few years after a secondary school opened up on an island (off the northwest coast) which had been a primary source of boarders for our school. The boarding section has since been converted into classrooms and a library. The priests live in the college giving a particular lived-in character to the school which, while an attractive homely trait in itself, can also help prevent break-ins in a reasonably big town with its allotted share of petty crime.

This academic year is my twenty first year teaching in St. John's College and I teach mostly senior and junior mathematics, junior science, senior chemistry, and social and personal education in a timetabled 'advisory' class. I have taught all age groups from first to sixth form students of varying academic abilities and degrees of commitment to work. I consider myself to be a firm and fair teacher who probably expects too much silence in class sometimes and is a little too strict sometimes especially with some of the junior classes. Overall, I cope pretty well with discipline problems. Now and then I become frustrated with myself because I allow myself to be trapped into conflict and at times lose my temper. I then get annoyed at myself for getting angry. However, I usually recover fairly quickly from this destructive cycle. To come more speedily to my point, I have found the vast majority of the students at St. John's College to be courteous and respectful of reasonable requests and I am quite accustomed to the systemics of teaching regarding discipline problems. This is not to deny that occasionally teaching can be very tough, full of tension and quite draining emotionally.

## **Part One**

I have no real problems regarding subject content for the chemistry, mathematics and junior science courses, my central concerns in my work being care for the students and myself (treating the students with respect and also expecting to be treated with respect) and helping my students to understand specific subject content. Not unlike Rogers (1961), I consider the relationship I have with the students to be of vital importance and foundational to the whole educative process in my teaching. What has helped to sustain my interest over the years, I believe, is the fact that I like teaching and that I like working with people and building a productive working relationship.

After the above albeit brief introduction to my students, my school and my teaching, I now wish to look at my change in direction in relation to three approaches as a way of mapping an autobiographical trace up to, and including, my initial involvement in action research.

## Part One

### **3. A Short Autobiographical Account Regarding My Involvement in Three Approaches [Mathematics and Chemistry, Guidance and Counselling, and Beginning Action Research]**

**What follows (pp. 5-13) is an edited version of an autobiographical account of my own learning written in August 1996 (Data Archive).**

#### **I. Mathematics and Chemistry (1970 - 1975): Approach One**

##### *How did I end up teaching on Vancouver Island?*

I began University in October 1970. I was eighteen years old and had obtained an honour in each of the six subjects I sat for the Leaving Certificate Examination: English, Irish, Latin, Geography, Mathematics, and Physics/Chemistry (combined). I asked the administrators at University College Galway if it was possible to do a BA/BSc combined and was told '*It is feasible but not advisable*' (What a wonderful statement!). So, I opted for a BSc and decided I would write poetry to keep some balance. I eventually took a first class honours degree in chemistry, a four year degree, in the autumn of 1974. I minored in mathematics. Our final examinations were in early September and we all studied throughout the summer of 1974. On a point of interest there were six girls and seven fellows in our final year in 1974.

In 1974/1975 I obtained an honours MSc in Inorganic Chemistry (by thesis) in ten months and in September 1975 I went to the University of British Columbia (UBC), Vancouver, to begin a PhD in Chemistry. I had a Teaching Assistantship which was offered to every PhD student: you got a stipend and helped out at first year practicals and in the corrections of the write-ups. In October 1975, six weeks after beginning my studies at UBC, I gave up doing the PhD!

## Part One

This was a great 'fall from grace' in my own eyes at the time and perhaps in the eyes of others. To compound the problem I was dreadfully lonely and also felt very foolish at having travelled all the way from Ireland to Canada to start a PhD only to give up the primary reason for going after six weeks!

Why did I quit the PhD?

When doing the MSc I missed the company of people. I was mostly working on my own in the laboratory and didn't have any lectures to attend. We synthesised and analysed thirty-nine new molecules (complex donor-acceptor tin compounds) that nobody else in the world had made at the time. I had chosen the particular area of chemistry because I was interested in using a variety of instrumental techniques to deduce the structures and compositions of new compounds. One of the techniques we used was Mossbauer spectroscopy (which uses a gamma-ray source to yield structural information), an instrumental technique that came into existence in 1968 - the same year as the birth of the University of Bath!

I can remember sitting on a train home once in 1975 and trying to work out the percentage of chlorine in a compound that we had recently made and, after a while, feeling that the work I was engaged in, while practical in itself, had no practical application anywhere and was therefore of little use to anybody in the world. It was purely academic. It was at this stage that I began to experience and to articulate some of the sheer and utter emptiness and meaninglessness (for me) of what I was doing. In terms of my mood on that particular occasion, I felt bored, empty, and sad - an indicator [which I came to more fully understand later in life as part of a discernment process within Ignatian spirituality (Green, 1984; Hughes, 1985, 1993)] that I needed to change my direction in my working life.

When I went to Canada I talked to about fourteen different lecturers at the University of British Columbia and discovered that my interest wasn't really fired by anything they were researching. Eventually I chose to work with Anthony Meyer who was a great person but

## Part One

after a short while I discovered that the area of chemistry I had chosen held no real meaning for me. Needless to say, the meaninglessness for me wasn't immediately evident and I came to understand it more fully later. We had intended studying the energy levels in the short-lived intermediate species permanganoyl fluoride,  $\text{MnO}_3\text{F}^+$ , using an atomic emission spectrum technique.

I could not have been further from true contact with people in an area of study which was in essence **a positivistic approach within the natural sciences.**

After a few weeks I knew I wasn't interested in doing a PhD in chemistry and rather than stay for a year and then give it up, I gave it up after six weeks.

### *Teaching in an Elementary School (1975 - 1976)*

Luckily, I got a job in a Catholic co-educational elementary school on Vancouver Island. I was interviewed by a nun, a priest (with whom I later shared a house for a few months), an Indian Chief - Elsie Bob (who wanted to hire me because I mentioned that I wrote some poetry), and a foreman at the local mill.

I taught a split grade, grades three and four, and most of the students were American Indians (now known as Native Americans). There were twenty-six students in the class, ages eight to twelve. It was a tough year.

I experienced very real pain and suffering that year. It was as if I had to begin to slowly build my self up again from scratch or, more correctly, as if I had to begin to discover and articulate at a much deeper level the person I felt myself to be, amidst all the confusion and uncertainty.

In July 1976 I returned to the Republic of Ireland.

## Part One

### II. Guidance and Counselling (1986-1988) and a 1990 Proposal for an MPhil/DPhil in Counselling: Approach Two

I had read Carl Rogers's 'On Becoming A Person' (Rogers, 1961) in March 1986 and because of my interest in the human person, and partly in order to bridge the gap in my own humanities/science education, I took a Postgraduate Diploma in Guidance and Counselling during 1986-1988 (part-time) with the University of Ulster.

I enjoyed going into Northern Ireland and meeting some new people (healthcare workers, teachers, social workers, adult educators, and lecturers who were giving the course). Our group did written assignments during the two years and in 1988 about twelve of us sat two three hour examinations. I got on well.

During 1986/1987 we had a series of sessions on 'human development' and were asked to do a written assignment. I chose 'Identity in Adolescence' even though the topic had not been covered in lectures. I believe this reflects a disposition towards nurturing a deeper understanding of some of the worlds of the students I teach. It is worth reiterating that I started teaching in St. John's College after completing the Higher Diploma in Education in 1977.

With regard to my students I believe that I am particularly sensitive, because of the experiences of my own life (especially my time in Canada), to struggles involving 'experiencing crisis/looking for commitment', especially with regard to career choice; I discuss interests/career aspirations with most of the students I teach. I have also been involved in career-guidance sessions with students over the last ten years. In this regard, I may possibly be a '*significant other*' for some of my students.

Many times during the eighties my mind was 'disturbed' by the notion of a doctorate (a 'nagging' at the back of my mind) - both the sense of failure from my experience of beginning and leaving the PhD in chemistry in Canada and the sense that there could be



## Part One

more to my life than teaching and that some time the opportunity to do a doctorate might again present itself --- but in what area!?

In the mid/late eighties I sensed that if I were to ever do a doctorate that the human person would be at the centre of the study.

My hankering to do research continued and for three months in early 1990 I read some of the 1985-1990 literature in Counselling and eventually put together a thirty page outline for an MPhil/DPhil in counselling with the University of Ulster which was very well received.

I'll include some of the proposal in this account because it will point, I believe, to my interest in an eclectic approach (borrowing what I believe is best from other areas) and also to my interest in positive human development. Further, it is a much more human area than studying energy levels in the short-lived intermediate species,  $\text{MnO}_3\text{F}^+$  ! Finally, it points to an attempt to become involved in a particular approach - **a social scientific interpretive approach**:

### Area Of Research

*The following proposed study is partly in response to a slightly nagging question, 'Does helping actually help?'. In particular, 'Is formal helping, as practised in counselling, effective for persons seeking help?'*

*In recent years, eclectic approaches to counselling have grown in popularity both in America and Britain (Dryden, 1984). However, the number of evaluations for such approaches is limited in British literature. Recent writings (indicating that no single therapeutic orientation is consistently superior to another) explicitly point the way to much needed efficacy studies of systematic eclectic therapies (Wolfe and Goldfried, 1988). Also, taking cognizance of the ongoing trend toward integrating developmental theory and counselling (Ivey and Goncalves, 1987) and of the many invitations issued for researchers to engage in field-based studies (Kurtz, Marshall, and Banspach, 1985; Baker and Daniels, 1989), it now seems timely to test the effectiveness of a developmental eclectic model as applied by a large counselling agency.*

## Part One

*Gerard Egan's model is chosen because, supposedly, it is systematic, developmental and eclectic (Egan, 1986), having a strong theoretical and evaluative base, is action-oriented and has an emphasis not only on managing problems but also on developing opportunities. This latter point harmonizes with the claim by Ivey and Goncalves (1987) that the essence of counselling is its orientation to positive human development.*

*The recommended counselling agency is the Catholic Marriage Advisory Council (CMAC) [Recently CMAC changed its name to ACCORD --- August 1996 comment] who have systematic training (using a microcounselling programme) in Egan's model for trainee counsellors and follow-up inservice courses to further nurture retention and generalization of skills. CMAC have a large intake of clients for marriage counselling (more than 3000 clients annually since 1984) and operate from centres in Northern Ireland and in the Republic of Ireland which are within a reasonable distance from Derry and from my home in the Republic of Ireland.*

*The general aim, therefore, of this study is to test the effectiveness of Egan's model for clients participating in marriage counselling with CMAC and to tease out implications for training of counsellors, for counselling practice and for future research. [Data Archive]*

After studying some of the literature in counselling I came up with six hypotheses - before talking to one counsellor or one client! The following was the second hypothesis:

*The following variables are correlated positively with effectiveness:*

*(a) counsellors' problem-analysis quality, (b) clarity of counsellor-statements of intentions (for interventions), (c) the frequency of counsellors' reasoning out aloud, and (d) the frequency of client reactions exhibited overtly during events classified as significant by clients. [Data Archive]*

I was in dialogue with Mary Gallagher, University of Ulster, during this time. Mary was in the process of arranging a meeting between us and Owen Hargie in April 1990. Mary was going to be my supervisor and Owen was going to be the overall supervisor if I decided to go ahead. I enjoyed the experience of drawing up a research proposal on my own. Mary had suggested some literature and I was given great freedom to work. Eventually I decided that I would not meet Owen and that I would not register for a research degree in counselling. Why?

## **Part One**

The following were some of the reasons why I didn't proceed:

- My working life was teaching and not counselling and I wasn't a practising counsellor.
- I was single and not married and felt that I would have less status than a married person with the CMAC administrators and with the counsellors and clients of the study.
- I felt the whole project would have involved an enormous burden of travel time.

|   |
|---|
| <b>III. Beginning Action Research: Approach Three</b> |
|---|

*A Way of Knowing My Committed Service in Education*

On February 15th, 1994 I travelled to Dublin (160 miles from where I live) for a seminar on action research because I was interested in looking at my teaching and was quite weary of, what I considered to be, an overemphasis on administrative, management, organisational and discipline issues and the consequential lack of emphasis on teaching and learning at our staff meetings in St. John's College. When I arrived at Marino Institute of Education I discovered that the seminar had been cancelled. However, I met Ben Cunningham who introduced me to action research and to some of the work of Jack Whitehead.

Subsequently, in March 1994, I began classroom action research using Whitehead's action-reflection cycle (Whitehead, 1985 in Whitehead, 1993: p. 54).

I was deliberately slow to register with the University of Bath; I wanted to prove and test my own commitment to researching my own teaching practice firstly as a confidence-building exercise.

In March 1994 I read Jean McNiff's '*Action Research: Principles and Practice*' (McNiff, 1988) and in April/May 1994 I read seven of Jack Whitehead's papers (supplied by Ben) and David Hopkins's '*A Teacher's Guide to Classroom Research*' (Hopkins, 1993). I found David Hopkins's book enormously helpful for creating a context and informing my research practice.

I used Whitehead's action-reflection cycle and David Hopkins's book to inform the section headings in my 1994 report, 'A Venture into Classroom Research' (Finnegan, 1994: Data Archive). A third writing of this report is in my Singularity Study Record

## Part One

which constitutes the main data base for my thesis [page 301 of the Appendices gives the list of contents for this study and pp. 61-63 give an action-reflection-cycle summary].

On Tuesday, March 7th, 1995 (after one year's involvement in action research) I rang Jack Whitehead and subsequently met him at the University of Bath for about four hours on Friday, May 26th, 1995 and we decided that I would register with the University of Bath on September 1st, 1995 for an MPhil/PhD in educational action research.

I have engaged in an **educational action research critical and creative approach** for the last two and a half years<sup>1</sup> and have found that it is a highly appropriate and meaningful research stance for me.

*Tuesday, August 20th, 1996*

For the present I do not wish to debate the relative merits/drawbacks of each approach or the issue of whether there are two or three or more approaches. What is pertinent is that I believe an educational action research critical and creative approach provides the best support for me in my endeavours to help my students to become more committed to learning and in my efforts to improve my own teaching and learning.

**Wednesday, January 7th, 1998**

What is briefly described and partially explained above is a practical and autobiographical movement from (i) a positivistic approach within the natural sciences through (ii) a social scientific interpretive approach within a study of counselling to (iii) an educational action research mode of enquiry where I am researching my own teaching practice and writing up my own work.

---

<sup>1</sup> 'An Autobiographical Account of Some of My Learnings' was originally written in August 1996.

## **Part One**

I would now like to describe and explain some of my initial motivations for becoming involved in action research and to briefly place my work in an Irish context.

## Part One

### 4. Wisdom of Practice and the Knowledge Base of Teaching / Relevance in an Irish Context

*A January 1998 Edited Version of My June 1996 Report*

#### *Wisdom of Practice and the Knowledge Base of Teaching*

In late 1993, I was weary of the predominant emphasis placed on administrative, organisational, management, and discipline matters in our school with the resultant lack of focus on teaching and learning that go on in classrooms.

Around this time, I had read (Burke, 1992: p. 79) that L.S. Shulman (1987a) claimed that the knowledge base of teaching has multiple sources far deeper, richer and more extensive than that provided by empirical research alone and that the '*Wisdom of Practice*' is one enormously rich source of knowledge about teaching which has remained largely untapped by educational researchers. I felt quite excited and encouraged by these sentiments because of, what I regard as, a potentially fuller and more human understanding of what constitute teachers' knowledge bases.

As I have just mentioned, on February 15th, 1994 I travelled to Marino Institute of Education, Dublin, and met Ben Cunningham who introduced me to action research and to Jack Whitehead's action-reflection cycle (Whitehead, 1985). I was clearly in a state of readiness and searching for some release when I went to Dublin and I must acknowledge that Ben helped to nurture within me a sense of being allowed to speak with a teacher's voice about my own teaching and learning and my students' learning, and also a sense of having the potential to qualify as an 'educational researcher' in my own right.

The notion of being an educational researcher in my own right, very much sown in my conversation with Ben Cunningham as he shared his understanding of Jack Whitehead's approach to action research, coupled with Shulman's contention that the '*Wisdom of*

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*Practice* ' is one enormously rich source of knowledge about teaching which has remained largely untapped by educational researchers helped to fire my enthusiasm and encouraged me to research my own practice as a means of creating/articulating a significant part of my own knowledge base in teaching. Or, to say it differently, as a means of creating my own educational theory.

On March 8th, 1994 I began researching my own teaching practice. I was later to read in Hopkins (1993: p. 73) that Polanyi (1962) suggested that we know a great deal more than we can put into words, and that we sense and understand more than we can describe or explain; this was twenty five years before Shulman wrote about the 'Wisdom of Practice'. In June 1994, when writing my first report (Finnegan, 1994: p. 5: Data Archive), I was fairly fired with enthusiasm (and still am - 1996 and 1998) and felt justified (even more so now - 1996 and 1998) in my belief that classroom action research offers an exciting and energising means of tapping into this rich vein of knowledge whereby teachers can share their findings and also learn to articulate more fully their 'tacit knowledge' and practical wisdom.

The following provides a further incentive for my enquiry by connecting to the need for an original contribution within an Irish context<sup>1</sup>.

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<sup>1</sup> In Chapter Two, 'Creating My Own Educational Theory' (pp. 19-41), I extend the context to include an incisive look at a relevant, although limited, selection of literature in the United States, Britain, and the Republic of Ireland.



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### *Relevance in an Irish Context*

Sugrue and Ui Thuama (1994) in a paper entitled, 'Perspectives on Substance and Methods in Post-Graduate Educational Research in Ireland', noted the following:

*It is generally accepted internationally, as evidenced by the title of the AERA publication, Complementary Methods, that to provide a comprehensive picture of any educational system, it is necessary to conduct different kinds of research from a variety of perspectives, employing different modes of enquiry. In the absence of this a very one-sided version of the multiple realities of schooling is likely to emerge. The dominant position of positivistic research in the Irish context (Republic of Ireland and Northern Ireland), with its emphasis on universalisation through decontextualised generalisations of survey findings, and the relative dearth of complementary research data through interpretive enquiry, suggests that the emergent picture is distorted. If many of the assumptions associated with the dominant paradigm of educational research are implicit in the work of forty-two per cent of post-graduate students who completed theses in 1990, and in the work of thirty-six per cent of those who graduated in 1980, this represents significant continuity over time with those characteristics, which, as Lynch (1987)<sup>1</sup> asserts, have dominated post-graduate educational research in Ireland ---- . (Sugrue and Ui Thuama, 1994: p. 121)*

While '*the pattern has become more complex and varied*' in Ireland in recent years<sup>2</sup> (Sugrue and Ui Thuama, 1994: p. 121), I believe my work will make its contribution to the Irish context as a different mode of enquiry to the predominantly positivistic mode utilised.

Later in their paper, Sugrue and Ui Thuama (1994) write:

*In so far as the data presented in this paper can be regarded as representative, they suggest that, at the post-graduate level, the nature and substance of theses have not oriented participants to investigate their contexts and professional actions to a significant degree. (Sugrue and Ui Thuama, 1994: p. 123)*

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<sup>1</sup> Lynch (1987: pp. 101-122) has argued cogently that the dominant ideologies in Irish educational research (Republic of Ireland) have been consensualism (i.e. uncritical acceptance of prevailing social norms and of those interests served by existing institutional arrangements), essentialism (the belief that traditionally acclaimed 'essential' truths are impervious to circumstance) and meritocratic individualism (perpetuating the meritocratic ideal by enhancing one's place in it to the detriment of others).

<sup>2</sup> Comparing 1990 theses with 1980 theses.

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It seems to me that my educational action research work with its emphasis on my students' learning and on my own educational development in my workplace will be one work that will help to redress this imbalance.

**Thursday, January 8th, 1998**

A highly pertinent comment that I now add is that rather than focusing on an

*'emphasis on universalisation through decontextualised generalisations of survey findings'* (Sugrue and Ui Thuama, 1994: p. 121),

the focus in my enquiry is on making meaning through time-bound and context-bound studies of singularities (pp. 57-58) where I nonetheless take on the task of addressing the notions of *generalisability* (Whitehead, 1993: p. 73; Lomax, 1994: pp. 118-119), *transferability* (Lincoln and Guba, 1985: p. 124) and *relatability* (Bassey, 1995: p. 111)<sup>1</sup> as I research my own teaching practice and create my own educational theory through dialogic reflection with self, students, critical friends, key respondents, and researchers in the literature.

In 'Setting the Scene', my intention has been to state some of my early 1994 beliefs, attitudes, and values which I brought to my educational action research enquiry.

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<sup>1</sup> Addressed in Chapter Twelve (pp. 267-281), as is the important reflective-transfer question, 'What's in My Work for Others?'.

## Chapter Two: Creating My Own Educational Theory

### How do I create my own educational theory in my educative relations as an action researcher and as a teacher ?

In this chapter, in order to further include, but move beyond, the Irish context (pp. 17-18), I engage in dialogue with some literature from the Republic of Ireland, the United States, and Britain regarding the constitution of a teacher's knowledge base and the role of 'foundation' disciplines<sup>1</sup> within that knowledge base. Alongside my interest in interpretations of what constitutes the knowledge base in teaching, I have a particular interest, as a teacher and as an action researcher, in who proposes the make-up of those knowledge bases and what roles teachers play in those understandings. My own view is that teachers, if they so wish, should be included in, and that they have the capacity to contribute to, the construction of a significant part of their own knowledge base in teaching. It is my hope that my efforts at describing and explaining my way of knowing my educational development within and through the four studies of singularities in this thesis will form an evidential support for such a view.

One of the original prompts for action to become involved in researching my own teaching practice stemmed from reading about Shulman's notion of '*Wisdom of Practice*' (Shulman, 1987a) in Andrew Burke's '*Teaching: Retrospect and Prospect*' (Burke<sup>2</sup>, 1992) in autumn 1993 [page 15]. The notion of articulating one's 'tacit knowledge' as a teacher has also been mentioned earlier [page 16].

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<sup>1</sup> Following Burke (1992: p. 116), I am including the philosophy, psychology, sociology, history, and economics of education in the 'foundation' disciplines. My inverted commas infer a query regarding the appropriateness of the word *foundation* and will be justified later in this chapter.

<sup>2</sup> Burke, who specializes in the philosophy and history of education, is a teacher educator for those studying for primary school teaching at St. Patrick's College, Drumcondra, Dublin, Republic of Ireland, and also acts as a consultant to the World Bank on the reform of teacher education in the Philippines.

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However, before further addressing the notion of tacit knowledge I would like to draw attention to Shulman's enumeration of four major sources for the teaching knowledge base within a 'pedagogical content knowledge'<sup>1</sup> model of teaching (Shulman, 1987a: pp. 8-12):

(1) Scholarship in content disciplines: The knowledge, understanding, skill, and disposition that are to be learned by school children - resting on two foundations: (a) literature and studies in the content areas and (b) the historical and philosophical scholarship on the nature of knowledge in those fields of study.

(2) The materials and settings of the institutionalised educational process.

(3) Formal educational scholarship: Here, Shulman includes philosophical, critical, and empirical literature which can inform the goals, visions, and dreams of teachers.

(4) Wisdom of practice: This is constituted by the maxims that guide or provide reflective rationalization for the practices of able teachers. [Shulman, 1987a: pp. 8-12]

While Shulman (1987a) overtly mentions drawing on philosophical, psychological and historical studies, he later<sup>2</sup> came to state, correctly in Burke's view (and in mine), that the 'foundations' metaphor was inappropriate and suggested that the disciplines<sup>3</sup> in question be thought of as the 'scaffolding' or the support 'framework' of the educational enterprise (Burke, 1992: p. 118). Later in the chapter, I will develop more fully my arguments for the role that I see for the disciplines of human science within my own knowledge base in teaching.

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<sup>1</sup> See Hoyle and John (1995: p. 53 and p. 65).

<sup>2</sup> Shulman, L. S. (1990) Reconnecting foundations to the substance of teacher education. *Teachers College Record*, 91(3), pp. 300-310.

<sup>3</sup> Footnote 1, page 19.

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In connection with the fourth source of teachers' knowledge base, wisdom of practice, Shulman (1987a) writes:

*A major portion of the research agenda for the next decade [1987-1997] will be to collect, collate, and interpret the practical knowledge of teachers for the purpose of establishing a case literature and codifying its principles, precedents, and parables. (Shulman, 1987a: p. 12)*

Rather than *case studies*, I refer to my own studies as *studies of singularities* and justify this nomenclature later (pp. 57-58). Nonetheless, in attempting to build a connection between Shulman's notion of a 'case literature' and my own notion of a complementary 'singularity study literature'<sup>1</sup>, I return to the joint themes of teachers' tacit knowledge and its articulation which will hopefully function as a bridge between the two kinds of literatures: Shulman (1987a: Footnote 5, p. 12) states:

*It might be argued that the sources of skilled performances are typically tacit, and unavailable to the practitioner. But teaching requires a special kind of expertise or artistry, for which explaining and showing are central features. Tacit knowledge among teachers is of limited value if the teachers are held responsible for explaining what they do and why they do it, to their students, their communities, their peers. (Shulman, 1987a: Footnote 5, p. 12)*

When I first read this footnote I was convinced that Shulman had omitted the word 'not' between 'are' and 'held'. But after re-reading the paper and the ensuing debate between Sockett (1987: pp. 208-219) and Shulman (1987b: pp. 473-482) I was disappointed to discover that there was no omission. It seems that Shulman (1987a) is dismissive of the possibility of teachers articulating their own tacit knowledge through dialogue with critical friends and key respondents and that he views such tacit knowledge as being '*of limited value*'. When this oversight is juxtaposed with Shulman's statement that '*the neophyte's stumble becomes the scholar's window*' (Shulman, 1987a: p. 4), it appears that Shulman's interpretive approach to constructing a knowledge base for teaching infers a significant power difference, in the sense of 'knowledge is power', between educational researchers

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<sup>1</sup> The two literatures that I envisage aren't necessarily mutually exclusive.

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who are scholars constructing the explanations for teachers' wisdom of practice and teachers who are practitioners. Admittedly, Shulman (1987a) states that *'A teacher is a member of a scholarly community'* (Shulman, 1987a: p. 9) and that

*'At base - we believe that scholars and expert teachers are able to define, describe, and reproduce good teaching'* (Shulman, 1987a: p. 12).

But Shulman (1997a and 1997b) does not go as far as granting a teacher a role as an educational researcher and that centrally is where I differ with Shulman's viewpoint. I am not claiming to be an expert teacher but I am claiming to be an educational researcher and an experienced teacher who is capable of a dialogic construction and articulation of a significant part my own knowledge base in teaching, thereby making some of my tacit knowledge more explicit. Possibly, my work may be regarded as scholarly.

Sockett (1987: p. 214), who challenges Shulman for dismissing the importance of teachers' tacit knowledge, most amazingly claims that *'(how) far the agent (teacher) can articulate it is irrelevant'* and, like Shulman (1987a), seems to miss the possibility of teachers forming a more explicit articulation of such tacit knowledge through dialogic reflective conversations and written correspondences between teachers and critical friends/key respondents. Gladly, Shulman (1987b), in responding to Sockett's paper, admits that he himself was far too hasty in dismissing the importance of tacit knowledge and then goes on to challenge Sockett in the following fashion:

*'How far the agent [teacher] can explain it is irrelevant'. That is simply not the case. When a teacher performs skillfully or beautifully, we may not be able to understand why until we consult the teacher. As teacher educators, our goal is for the teachers to gain both sufficient control over her (sic) teaching, and sufficient purpose and agency, that she (sic) can teach well when it is called for. To me this seems inherent in the very notion of reflection as a source of future wise action. The ability to explain good teaching is far from irrelevant; it may well be the key to whether the desired actions can be engaged in in the future.* (Shulman, 1987b: p. 479)

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The 'we' in Shulman's '*we may not be able to understand why until we consult the teacher*' implicitly communicates, despite the fact that later studies include experienced teachers in roles as key informants (Shulman, 1987b: p. 479), that the teachers are not the educational researchers constructing and articulating the final written explanations for the teachers' wisdom of practice. However, understood in a different light, '*we may not be able to understand why until we consult the teacher*' taken together with Shulman's notion that '*(the) ability to explain good teaching is far from irrelevant; it may well be the key to whether the desired actions can be engaged in in the future*' create an opportunity for me, as a teacher, to claim my right with a reasonable degree of self-advocacy<sup>1</sup> to become one of the 'we' who can proffer written descriptions and explanations for my own wisdom of practice, thereby qualifying as an educational researcher in my own terms. It is in this sense that the joint themes of teachers' tacit knowledge and its construction/articulation<sup>2</sup>, both by teachers and teacher educators, can function as a significant bridge of communication between Shulman's notion of a 'case literature' for teaching (written by interpretive researchers) and my own notion of a complementary 'singularity study literature' for teaching (written by educational action researchers)<sup>3</sup>. At this juncture, I also believe it is important to state that I do not wish my 'bridge of communication' language to be understood or read as rhetoric artificially dissolving genuine difference of opinion, but rather read and understood as rhetoric for communicating with one another *despite* differences of opinion<sup>4</sup>, especially in regard to what constitutes educational research and who qualify as educational researchers.

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<sup>1</sup> There is a full explanation of this term ahead (page 30).

<sup>2</sup> In the sense of transforming practical consciousness into discursive consciousness (Giddens, 1979: p. 5): Giddens defines 'practical consciousness' as 'tacit stocks of knowledge which actors draw upon in the constitution of social activity' and 'discursive consciousness' as involving 'knowledge which actors are able to express on the level of discourse' (Giddens, 1979: p. 5). Elliott (1993: p. 184) defines 'discursive consciousness' as 'the ability to describe what one is doing and why one is doing it' to others.

<sup>3</sup> I am in no way implying that all 'case literature' is written by interpretive researchers and that all 'singularity study literature' is written by educational action researchers. I am merely comparing my research stance with that of Shulman.

<sup>4</sup> An interesting contextual matter is that I am writing this on Friday, May 22nd, 1998, the day of the Northern Ireland/Republic of Ireland referenda on the recent Good Friday/Belfast Agreement (April 10th, 1998).

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In the above I have shown that although Shulman is dismissive of teachers' tacit knowledge in his earlier 1987 paper, he recognises this oversight in his follow-up paper later that year which was written in response to Sockett's criticisms<sup>1</sup> of his first paper. But, whilst showing deep respect for teachers<sup>2</sup> and for dialogue, Shulman does not go as far as seeing the teacher in the role of an educational researcher constructing/articulating, through a dialogic coming to know, a significant portion of her/his own wisdom of practice. This extra democratic leap of faith, in the sense of granting greater equality despite knowledge and power differences, may have been *epistemologically* impossible (but not impossible) for Shulman because of his interpretive outsider-looking-in approach geared to enhancing present and future understandings and **future practices of others**. Such an approach has a different but overlapping research terrain and stance to my own educational action research insider-looking-out approach geared to enhancing present and future understandings and **present and future practices of self with others**.

Summarising, in addressing the issue of teachers' knowledge bases, Shulman (1987a and 1987b) failed to acknowledge the possibility of teachers writing the final accounts of their own practice and thereby contributing to the construction of a significant part of their own knowledge bases in teaching. However, despite this limitation, the emphasis he places on the roles and interactions of both content knowledge and pedagogical knowledge in teaching practice is eminently worthy of note in my view.

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<sup>1</sup> I don't think Sockett's criticisms of Shulman's earlier 1987 paper of lack of attention to context, inadequacy of its language of description of the moral framework of teaching, and lack of sophistication in Shulman's account of the relation between reason and action in teaching were sufficiently substantiated by Sockett to warrant further discussion in this chapter.

<sup>2</sup> For example, Shulman (1987b: p. 481) writes: *'The concept of a National Board of Professional Teaching Standards is not that of a top-down imposition of standards from the academic ivory tower onto the teaching proletariat. --- The Board is composed of a clear majority of working classroom teachers in the company of teacher educators, subject-matter specialists, and representatives of school administration, school boards, government, business, and families'*.



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Returning to the theme of 'foundation' disciplines and their connection with teaching practice and teachers' knowledge bases, the following triangulation of sources of information seems to infer that the 'foundation' disciplines are, in fact, not necessarily foundational for successful teaching:

**Burke (1992: p. 118):** *'people can teach and even teach well, without having studied foundation disciplines'.*

**Hoyle and John (1995: p. 50):** *'many successful teachers, some of whom have never been formally trained, can often achieve success by apparently by-passing this 'stock of professional knowledge', relying instead on their own common sense, intuition and experience'.*

**Hargreaves (1996: p. 2):** *'It was once hoped that the so-called foundation disciplines of education - psychology, sociology, philosophy and history - would provide this knowledge-base and so were given great importance in the curriculum of teacher training, B.Ed. courses especially. Unfortunately, very few practising teachers themselves had this knowledge-base or thought it important for practice. It remains true that teachers are able to be effective in their work in almost total ignorance of this infrastructure'.*

Again, consistent with my dialogic approach to theorising, I will converse critically with what the above researchers have to say about teachers' knowledge bases, concomitantly drawing out the distinctiveness of my own stance.

**Burke**, a teacher educator lecturing in the philosophy and history of education in Dublin (Footnote 2, p. 19), believes that

*'the integration of foundation disciplines and the demonstration of their relevance to practice is, perhaps the most difficult problem in professional education'* (Burke, 1992: p. 122).

Although he agrees with Shulman's view, as I do, that the 'foundations' metaphor is inappropriate (page 20), Burke still sees each of the disciplines (philosophy, psychology,

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sociology, history, and economics of education) as a critical part of the teaching knowledge base.

Whilst noting that the separate treatment of the foundation disciplines has been abandoned in many teacher education programmes in Europe and the USA and that they are now dealt with as they arise in the context of practice teaching and/or case studies, or the students are given a choice as to which foundation disciplines they wish to take, Burke queries the wisdom of the latter option if each discipline, in his view, constitutes a critical part of the knowledge base of teaching. Further, Burke (1992) has reservations about the practice-based approach as the sole means of dealing with the foundation disciplines maintaining that

*'A strong case could be made for a solid grounding in each of these areas (philosophy, psychology, sociology, history, and economics of education) through well-planned lectures/discussions/workshops prior to extensive guided engagement in practical work'* (Burke, 1992: p. 122).

In justifying a solid grounding in each of the disciplines *prior* to extensive engagement in practical work, Burke (1992: p. 122) refers to a similar approach in other professional areas (for example, engineering and medicine) and states that, if guided by practice alone, a student-teacher's knowledge of the disciplines is likely to be haphazard and superficial. As the latter notion is probabilistic and predictive without a sufficient evidential base, the probability is not necessarily high, in my view: for example, timetabled systematic reflection on teaching practice for the student-teacher over a lengthy period of time along with concurrent lectures, discussions, and workshops relating to such reflection could lead to a wholesome knowledge of the 'foundation' disciplines and possibly make them more meaningful for the student-teacher. Nevertheless, I agree with the contention that some initial input on the disciplines *prior* to practice (together with later inputs) could contribute to a fuller treatment of the disciplines and is a worthwhile enterprise for the following reasons: (i) initial input on the disciplines could have a positive influence on near future student-teacher actions and reflective practice in the classroom, (ii) the disciplines

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which relate to education, not necessarily always in a practical manner, are a means of intellectual sustenance in themselves and need not be *solely* associated with the young person's future role as a teacher; that is, I believe the minds of student-teachers need intellectual stimulation which has a bearing on education (e.g. philosophy of education rather than astrophysics) but need not necessarily at all times and in every situation relate *directly* to particular student-teachers'/future-teachers' specific work practices. For example, one might study research on gender equity among co-educational secondary school students in South Africa but end up teaching in a girls' secondary school in London. In the above I am neither inferring that the disciplines ignore specific teaching practices nor that the initial input prior to extensive teaching practice (and later inputs) be composed only of the 'foundation' disciplines.

When I read for my Higher Diploma in Education (HDE) in University College Galway (west of Ireland) in 1976/1977 we studied the philosophy of education, educational psychology, education and society (which was a mixture of history and sociology), curriculum and assessment, science teaching, and mathematics teaching. Does the fact that I never formally studied the economics of education mean that I am lacking a critical part of the knowledge base of teaching as Burke (1992: pp. 121-122) would believe? If some other teachers can teach successfully without a formal study of the five 'foundation' disciplines, is it possible that I can teach successfully without a formal study of only one of those disciplines? How can I make a judgement on this matter? Perhaps the fact that I later came to read John Kenneth Galbraith's *The Nature of Mass Poverty* (1979) in the mid-1980s and *The Culture of Contentment* (1992) in 1993, two books that I find inspirational in their clarity of thought and leanness of language and which I rate among the best books I have ever read, may infer that I have enough tacit knowledge of economics to be reasonably successful in teaching and that in my particular work situation I may know more about economics than I think I know? As I say, 'Perhaps'!?

Suppose, for the present, I accept Burke's notion that each discipline constitutes a critical part of the knowledge base of teaching (Burke, 1992: pp. 121-122), a very significant and

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central question is, 'Do the "foundation" disciplines constitute the whole "scaffolding" for the education enterprise?'. The fact that the 'foundation' disciplines in England and Wales have been reduced to an estimated 10% or less of the current B.Ed. programme (Burke, 1992: p. 117) seems to infer that the 'foundation' disciplines do not, in effect, constitute the whole 'foundation' of teaching. Indeed, regarding the term 'foundation', it has been mentioned earlier (page 20) that Burke (1992: p. 118) agrees with Shulman's contention (Shulman, 1990: pp. 300-310) that the 'foundations' metaphor is inappropriate and that the disciplines in question be more appropriately thought of as the 'scaffolding' or the support 'framework' of the educational enterprise. While the term 'scaffold' may seem to imply a rigid structure, it can be used flexibly to denote continuous revision of action in a socially interactive situation [Wood, Bruner, and Ross (1976) in Schaffer (1996: p. 270)]. Further, Rogoff (1990) suggests adopting 'guided participation' (which includes the notion of a flexible web of relationships) as a more inclusive concept than terms like 'scaffolding' (Wood, 1998: p. 101). As a teacher can also guide her/his own participation in teaching, it is my contention that a teacher is therefore also capable of creating, or at the very least of contributing to, 'scaffolding' for her/his own actions, understandings, judgements, and decisions in the teaching enterprise. It is in this sense that I contend that the 'foundation' disciplines do not constitute the whole scaffolding for the education enterprise and that teachers can construct some of the 'scaffolding' of their own considered judgements in teaching. Further, in connection with my studies of singularities and the notion of educational theory, it is precisely at such a juncture that I draw on the work of Whitehead (1993) who states that

*'the presentation of our claims to know our own educational development has the capacity to allow the inclusion of the concepts from the disciplines of education whilst being itself irreducible to the form of any of the present disciplines of education'* (Whitehead, 1993: p. 57).

It is also my belief that flexible utilization of terms like 'guided participation' and 'scaffolding' could create a new meeting ground for constructive dialogue between the classical and context-bound conceptions of professional knowledge (Hoyle and John,

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1995: p. 49) in teaching, especially with regard to openness about who and what guides participation and who and what builds scaffolding in teaching. It seems to me that Burke leans towards a classical conception of professional knowledge in teaching, while my own approach to constructing professional knowledge from my singularity studies is much more context-bound but is also open to the notions of *transferability*, *relatability*, *generalisability*, and to the question, *'What's in My Work for Others?'* [Chapter Twelve].

Yet, an earlier question (inferred on pp. 27-28) still remains, *'Is each discipline a critical part of the knowledge base of teaching?'* As Burke (1997) states that

*'the professional person is one who is considered competent to operate at a critical decision-making level in - a complex context and who has the knowledge and technical skills to effectively implement decisions taken'* (Burke, 1997: p. 132),

he places a central emphasis in professionalism on the understandings, judgements, decisions and actions of practising teachers in particular contexts. Taking such a statement together with an earlier acknowledgement (Burke, 1992) that the

*'attempt to re-focus attention back on to the content, context, and practice of education and to end the isolated treatment of the foundation disciplines has certainly been a move in the right direction, for these disciplines are relevant insofar as they enlighten practice and contribute to the education of the practitioner'* (Burke, 1992: p. 123),

may open up the possibility of the criticalness of a particular 'scaffolding' discipline being dependent on the context of a particular teacher's practice (e.g. pp. 17-18).

Nevertheless, apart from the fact that Burke is a lecturer in both the philosophy of education and the history of education - two of the 'foundation' disciplines, it may well be the case that Burke's attitude to the criticalness of the 'scaffolding' disciplines in the knowledge base of teaching in his 1992 writings was strongly influenced in a consensual manner by the education research climate of the time in the Republic of Ireland<sup>1</sup>. Relating

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<sup>1</sup> See the Sugrue and Ui Thuama (1994) quotes on page 17 and Footnote 1 on the same page.

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more fully to action research activity in the present education research climate in the Republic of Ireland, Hyland and Hanafin (1997: p 162) in a paper entitled '*Models of Incareer Development in the Republic of Ireland*' note:

*Action research has gained considerable ground as a model of teacher professional development internationally, although it has made relatively little impact in Ireland apart from its introduction into some accredited university/college courses and various curriculum projects (Leonard, 1995). One example of action research used for incareer development in Ireland is the Marino Institute of Education Action Research Pilot Project which comprised nineteen case studies (McNiff and Collins, 1994). It was led by five staff at Marino who provided support for teachers involved in the project. --- Leonard (1995) notes that current inservice education reflects a view of the teacher as recipient rather than creator of knowledge: "it typically transmits to teachers other people's knowledge". (Hyland and Hanafin, 1997: p 162)*

Leonard's discernment of a professional development culture which views '*the teacher as recipient rather than creator of knowledge*' infers that I need to exert a reasonable degree of self-advocacy in making a counter-cultural claim in the Republic of Ireland that I, as a teacher, can dialogically create a significant part of my own knowledge base in teaching.

I have the following senses in mind when using the term 'self-advocacy' (Collins, 1994):

- 1. the practice of having mentally handicapped people speak for themselves and control their own affairs, rather than having nonhandicapped people automatically assume responsibility for them.*
- 2. the act or condition of representing oneself, either generally in society or in formal proceedings, such as a court.*

In a cultural sense I am a 'mentally' handicapped person trying to speak for myself in an educational arena, rather than allowing some university academics assume *sole* responsibility for articulating my particular kind of teaching knowledge.

Finally, Burke (1997: p. 137) states that teacher professionalisation implies more trust in teachers, more freedom for teachers, and more control over their own enterprise and

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suggests that, while Teacher Empowerment has been coined as a name for such a process, the French word for Empowerment - *Responsibilisation* - may be more appropriate as it stresses the sharing of responsibility rather than of power. Burke proffers the term *responsibilisation* primarily because those already in control of education - especially those bearing ultimate national responsibility - might perceive in the term '*Empowerment*' a threat to their position of power and/or to the quality of national education. However, while I am attracted to the term '*Responsibilisation*', to my mind, when I am sharing in responsibility I am also sharing power understood not only in a 'rank' sense but in a 'service/rank' sense with the emphasis on 'service'; therefore, I disagree with Burke's primary reason for choosing '*Responsibilisation*' and proffer a both/and stance regarding responsibility/power which contrasts with Burke's either/or stance. Another important reason why the term *responsibilisation* appeals to me is that potentially responsibility can respond positively to, and also move beyond, any call to accountability<sup>1, 2</sup>.

Continuing my dialogue with the group of researchers mentioned earlier (page 25) and what they have to say about teachers' knowledge bases, **Hoyle and John** (1995: pp. 44-76) analyse the issue of professional knowledge in terms of: (i) knowledge and the professions, (ii) the emergence of professional knowledge in teaching, and (iii) how professional knowledge is used in teaching. Regarding (i) knowledge and the professions, the classical and context-bound conceptions of professional knowledge have already been discussed somewhat (pp. 28-29). One further point worth stating in connection with the classical conception of professional knowledge, where it is held that rooting education in the social sciences mirrors the professionalism of medical doctors rooting their medical practice and knowledge in chemistry, physiology and biology as the base sciences for medicine, is that academics now acknowledge that

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<sup>1</sup> See Hoyle and John (1995: pp. 103-128) for an interesting discussion on the issue of responsibility and of the relationship between responsibility and accountability.

<sup>2</sup> Without complacency towards my own government on my part as a teacher in the Republic of Ireland, a pertinent contextual matter worth noting at this juncture is that teachers in the Republic of Ireland have not experienced the same kind of '*state pressure*' as their British counterparts '*to conform to an accountability structure which has done much to undermine*' teacher autonomy in the workplace (Hoyle and John, 1995: p. 74).

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*'they misunderstood many of the key variables that operate in classrooms, and that bridging the gap between knowledge and practice was more complex than they first realized'* (Hoyle and John, 1995: p. 49).

In my view, this acknowledgement can provide support for both classical and context-bound conceptions of professional knowledge; support for a classical conception of professional knowledge where it is claimed that enough is now known to guide practice<sup>1</sup>; and support for a context-bound conception of professional knowledge where specific complexities and practical particularities within skills, understandings, judgements, decisions<sup>2</sup> and actions can be emphasised. As the latter interpretation potentially contains within itself (a) an appreciation of studies of singularities in which there are boundaries and also (b) a view of the knower and the individual human mind that acknowledges the capacity of the knower to objectify - make explicit - the contents of her/his own consciousness, this is where I make my stand.

In relation to (ii) the emergence of professional knowledge in teaching, Hoyle and John (1995: pp. 56-65) name and expound on five typifications of professional knowledge: the cognitive, the practical, the biographical, the contextual, and the subject (Shulman's work on 'pedagogical content knowledge' fits into this last-named category). While these categories are insightful and helpful as 'outside-in perspectives', I am in agreement with Eames (1995) when he writes:

*A sixth 'typification' - teachers' professional knowledge - is necessary, I believe, to show how an insider perspective differs from more traditional views of what knowledge in education is assumed to be.* (Eames, 1995: p. 428)

However, while there is a lot to be admired in Eames's work in terms of his consistent and long-term commitment to a dialectical, action-research-based form of knowledge, it is my belief that he was working from within singularity studies in his thesis and to infer [as I

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<sup>1</sup> Hoyle and John (1995: p. 49) mention Good (1992) as one academic supporting this stance.

<sup>2</sup> From Lonergan (1972: pp. 3-25) I have learned to appreciate a particular view of the dynamic structure of human consciousness and of the human being as a knower, which includes an appreciation of experiencing, understanding, judging, and deciding as key dynamic 'operations' within that 'structure'.



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believe he does (Eames, 1995: p. 441)] that potentially there is a single epistemology underpinning the professional knowing of teachers (which they have not yet got according to Eames!) is to, perhaps inadvertently, venture into making a major predictive and prescriptive generalization not necessarily warranted by the singularity-study nature of Eames's work. However, I think Eames's claim to *'have given evidence, embodied in (his) thesis, that a dialectical form of educational knowledge might appropriately constitute a form of teachers' professional knowledge'* (Eames, 1995: p. 429) is fully justified. My reservations come alive especially when there is the faintest hint that there is only one educational epistemology of practice for teachers and that the only possible form of 'insider' professional knowledge for teachers is dialectical! This is not to deny a dialectical way of knowing within my own singularity studies.

In connection with (iii) how professional knowledge is used in teaching, Hoyle and John (1995) write:

*By grounding professional knowledge within the 'wisdom of practice' (Elliott, 1989), it is hoped that teachers will be able to ——— gain some semblance of control over their professional destiny. The popularity of such a conception, particularly among teacher educators and some educational academics, is based on an emancipatory perspective which it is believed will lead to greater personal-professional empowerment. (Hoyle and John, 1995: pp. 75-76)*

Analysing Elliott's paper (Elliott, 1989), with a particular interest in 'wisdom of practice', I wrote the following in July 1997:

*One vision of professional development proffered by research communities has a philosophical base in 'the philosophy of knowledge' perspective on the aims of the academic disciplines where the central idea is*

*'that enquiry can best help us realise what is of value in life by devoting itself, in the first instance, to achieving the intellectual aim of improving knowledge, in a way which is dissociated from life and its problems, so that knowledge thus obtained may subsequently be applied to helping us solve our problems of living'<sup>1</sup>.*

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<sup>1</sup> Maxwell, N. (1984) *From Knowledge to Wisdom: a revolution in the aims and methods of science*. Oxford: Basil Blackwell. I tried to get this book from the USA, Britain and the Republic of Ireland but it

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*Professional knowledge, stemming from this view on educational theory, consists of a theoretical understanding of ideas about various aspects of education drawn from disciplines such as philosophy, psychology, sociology and history, and 'knowing how' to apply them in particular practical situations (Elliott, 1989: p. 81). The 'disciplines' approach, therefore, claims that educational theory is constituted by those disciplines.*

*An alternative philosophical outlook on the aims and purposes of the academic disciplines [leading to an alternative vision of professional development] - 'the philosophy of wisdom' approach - maintains that*

*'enquiry, in order to be rational, in order to offer us rational help with realizing what is of value, must give absolute priority to our life and its problems, to the mystery of what is of value, actually and potentially, in existence, and to the problems of how what is of value is to be realized. Far from giving priority to problems of knowledge [which is still a valued priority (own comment)], enquiry must, quite to the contrary, give absolute priority to articulating our problems of living, proposing and criticising solutions, possible and actual human actions. The central and basic intellectual task of rational enquiry, according to the philosophy of wisdom, is to help us imbue our personal and social lives with vividly imagined and criticized possible actions so that we may discover, and perform, where possible, those actions, which enable us to realize what is of value in life — for each one of us the most important and fundamental enquiry is the thinking that we personally engage in — in seeking to discover what is desirable in the circumstances of our lives, and how it is to be realized'<sup>1</sup>.*

*The aim of educational action research, in a 'philosophy of wisdom' approach to the aims and purposes of the academic disciplines, is not the generation of highly specialised and differentiated theories about education, but the [articulation and] generation of practical wisdom (Elliott, 1989: p. 83).*

*Conceived as an educational theory, wisdom constitutes a complex structure of ideas [and actions] which cannot be broken down into its constitutive elements - as propositions - without loss of meaning [and Elliott (1989: p. 84) contends that] such an holistic appreciation of educational practice cannot be atomised into psychological, sociological, philosophical theories and retain the status of an educational theory. It may be constituted in part by such theories, but these in isolation do not constitute **educational theories**, although they may be called **theories about education** (Elliott, 1989: p. 84).*

Elliott's notion that **educational theories** (from a 'philosophy of wisdom' perspective) can be constituted *in part* by **theories about education** is consistent with my stance that

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is out of print. However, AK, an academic at the University of Bath, felt that the content of this book was not necessary for my thesis.

<sup>1</sup> Maxwell, N. (1984) *From Knowledge to Wisdom: a revolution in the aims and methods of science*. Oxford: Basil Blackwell.

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the ‘foundation’ disciplines do not constitute the whole scaffolding for the education enterprise and that teachers can construct some of the ‘scaffolding’ of their own considered judgements in teaching (page 28). Interestingly, Bassey (1995: 37-47) makes a similar adjectival/prepositional distinction to Elliott’s in distinguishing between **educational research**<sup>1</sup> (of which **educational action research** is a subset) and **sociological, psychological, historical, philosophical, and economic researches in education**:

*In my view research in educational settings is only educational research if it is concerned with attempts to improve educational judgements and decisions. Research in educational settings which aims to develop sociological theory, psychological theory, philosophical constructs or historical ideas is not educational research, but sociological, psychological, philosophical or historical research in educational settings<sup>2</sup>. It is time for educational research to assert that it has come of age. It is time to leave the parental home (if sociology and psychology were the parents) and stand firmly on our own ground. That ground is the educational process of the making of decisions and judgements by practitioners and policy-makers, from the standpoint of trying to improve them. (Bassey, 1995: p. 37)*

It seems to me that Elliott’s and Bassey’s adjectival/prepositional distinctions are but one means of discerning the roles that the ‘scaffolding’ disciplines and the social sciences play in educational research, in general, and in educational action research, in particular. For me, it’s crucial that the adjectival/prepositional rhetoric be understood as inclusive rather than exclusive in character. That is, it is my belief that insights from *theories about education* can be integrated into my own *educational theory*, but without the latter being reduced *solely* to any one of the former<sup>3</sup>.

In stating that educational action research is a subset of educational research, Bassey (1995: p. 46) notes that, while educational action research ‘*aims critically to inform educational judgements and decisions in order to improve educational action*’, it differs

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<sup>1</sup> Bassey (1995) defines educational research in the following manner: ‘*Educational research “is systematic, critical, and self-critical enquiry (made public) which” aims critically to inform educational judgements and decisions in order to improve educational action*’ (Bassey, 1995: p. 2 and p. 39).

<sup>2</sup> Bassey’s underlines.

<sup>3</sup> Whitehead (1993: p. 57), making a similar point, has influenced my understanding on this matter.

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from other kinds of educational research in that it is research carried out by the actors themselves. It is research carried out by practitioners to improve their own practice.

However, critics of an 'insider' educational action research approach to educational research may proffer that

*the proclamation of reflective practice may be leading teachers down a blind alley where teaching and reflecting simply become routine matters and where practice itself is never tested against a broader public context of ideas and issues. ——— encouraging teachers to be reflective practitioners ——— may be limiting them to the confines of their personal knowledge and to a private engagement with it.* (Hoyle and John, 1995: p. 76)

I believe the above is a possible 'shadow side' of engagement in reflective practice *only* where there is insufficient high quality dialogue with self and others (including researchers in the literature) and insufficient openness to engage critically and creatively with the ideas of others within a dialogic coming to know. In my own approach to dialogue with self, students, critical friends, key respondents, and literature in this chapter and in the remainder of my thesis, it is my hope that the reader will agree with my claim that I have tested my practice and understandings '*against a broader public context of ideas and issues*' and that my subjective knowledge, which is also intersubjective to the extent that I have engaged in a dialogic coming to know, extends beyond the personal and my own private engagement with the personal.

Leonard (1997), an educational action researcher and a professor of education in the University of Limerick, Republic of Ireland, clearly recognises '*a broader public context of ideas and issues*' when, in relation to the 1996 Educational Studies Association of Ireland conference, he notes:

*'A major contribution of the 1996 conference was to demonstrate that responsibility to realise the scope that teaching careers offer for teachers' growth and professional development does not belong only to teachers but is widely diffused'.* (Leonard, 1997: p. ix)

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I believe my ready agreement with Leonard on this matter is not cancelled by my claim that responsibility for realizing the scope within this thesis for creating my own educational theory *largely* belongs to me as an action researcher and as a teacher.

Once again, returning to my dialogue with the group of researchers mentioned earlier (page 25) and what they have to say about teachers' knowledge bases, Hargreaves (1996: p. 2) has noted that, for teachers, there is '*no agreed knowledge-base*' for teaching and that '*the disciplines of education are seen to consist of "theory" which is strongly separated from practice*'. Hargreaves (1996: pp. 1-8) believes that a far more productive relationship between research and professional practice exists in other professions (e.g. medicine) and that, in a positive imitation of medicine, if an evidence-based body of knowledge for teaching is to be formed<sup>1</sup>, a major change in educational research is needed to make it more relevant to the professional practice of teachers. While, at this juncture, I don't see it as necessary to explore in detail whether teaching can be based *solely* on research knowledge, it may be worth mentioning that Hammersley (1997: p. 147), debating with Hargreaves, uses Hargreaves's thinking about the '*largely tacit nature*' of a '*teacher's common sense knowledge of life in classrooms*' to support his own view that teaching cannot be *based* on research knowledge. However, while I am in agreement with Hammersley's conclusion if '*solely*' is added after '*based*'<sup>2</sup>, I feel Hammersley's argument is quite flawed as it seems to rest on the unexamined assumption that a teacher's present tacit knowledge remain 'tacit' in the future and it also seems to ignore the fact that some teacher tacit knowledge can become more explicit through teacher involvement in educational research or educational action research. Interestingly, D'Arcy (1994) makes a similar point in response to Hammersley (1993: pp. 425-445):

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<sup>1</sup> Hargreaves (1997: pp. 405-419) notes *differences* as well as *similarities* between: (i) teachers and doctors, (ii) the nature of research in the two professions, and (iii) the relation of research to professional practice in both education and medicine. Hargreaves's point, I believe, is that the similarities between education and medicine are sufficiently significant, despite the differences, to warrant education's imitation of medicine's evidence-based approach to practice.

<sup>2</sup> My own belief is that a central role is played by teachers' experiencing, understanding, judging, deciding (Loneragan, 1972: pp. 3-25) and concomitant/consequent/subsequent action in teaching and that educational research potentially is one significant source informing these activities. It is also my contention that these activities, the first four of which are *operations* of the human mind (in a social context), can help shape educational research. In my reading, Bassey (1999: p. 50) supports this view.

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*'As for "the knowledge teachers have which will have been processed implicitly" - one of the most valuable outcomes of TR (teacher research) is the demand that it makes on the investigator to formulate her intentions, observations and reflections explicitly' (D'Arcy, 1994: p. 292).*

In a later response to D'Arcy (1994: pp. 291-293), Hammersley (1995: pp. 117-119) is curiously silent on D'Arcy's statement regarding a teacher's tacit knowledge becoming more explicit through a teacher's engagement in research. Nevertheless, despite this apparent oversight, Hammersley (1995: p. 119) does acknowledge that he has *'no doubt at all that teachers and advisors can do excellent research'*.

While I don't consider it my task in this thesis to fully open the debate as to whether teaching can be *based* on research, I believe it is important to state overtly that I do not hesitate to accept that educational research potentially can make a significant contribution to a teacher's knowledge base. However, what is really significant in the present context, I believe, is the potential role within a reformed educational research that Hargreaves sees for some teachers to create/articulate some of their own knowledge base in teaching. It is my hope that this thesis provides a particular exemplar for the creation/articulation of a significant part of my own knowledge base in teaching through my constructions/articulations of experiences, understandings, and judgements relating to more democratic actions in the classroom, more socially just actions in the classroom, and a greater appreciation of a sixth form student's 'conceptual vision' in mathematics.

Unlike Shulman (1987a), who did not go as far as granting a teacher a role as an educational researcher (pp. 21-22), Hargreaves (1996), in advocating changes for educational research, suggests that some of his recommended £10-20 million allotted to provide research evidence on effective practice go towards funding

*'teachers as researcher-practitioners rather than (teachers as) the objects of the activities of academic researchers' (Hargreaves, 1996: p. 7).*

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Admittedly, in highly prizing Lewin's contention that research has a double function of producing high quality social science *and* generating applications for human betterment, Hargreaves (1997) claims that

*'some action researchers in education — seem largely to have abandoned the first element in (Lewin's) double function' (Hargreaves, 1997: p.412).*

Further, Hargreaves (1997) states that he has

*'no evidence that, taken as a whole, teachers-as-researchers and their supervisors have generated the cumulative body of knowledge of the kind that Lewin envisaged or that the outcomes have been widely disseminated' (Hargreaves, 1997: p.412).*

Nevertheless, he acknowledges that a diversity of research approaches is most likely to produce high quality applications *and* a scientific infrastructure. While Hammersley (1997: p. 155), in similar 'no doubt' rhetoric to that mentioned above (page 38), acknowledges that he has *'no doubt that practical research carried out by teachers and educational managers can be useful'*, he believes *'there are dangers — in this kind of work being required to be scientific'* and in support of his latter statement Hammersley cites Hargreaves's seeming recognition that

*'what may be most useful in developing the professional culture of teachers is not so much scientific research as "accumulated wisdom" in the form of case records, with commentaries and critiques' (Hammersley, 1997: Footnote 22, p. 158).*

It seems to me that Hammersley in this particular instance of argumentation implies that the last-named viewpoint is wholly Hargreaves's whereas only part of it is Hargreaves's [that is, the quotation less the bold type]; it is wholly Hammersley's and then Hammersley uses it to support his own viewpoint that *'there are dangers — in this kind of work being required to be scientific'*.

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To summarise, it appears to me that the debate between Hargreaves and Hammersley, in terms of my particular fine-tuned focus on the roles that teachers can play in educational research and knowledge production, shows that Hargreaves accepts, with reservations, that teachers as educational action researchers can qualify as educational researchers just as university researchers can, whereas Hammersley, with his slightly dismissive pattern of 'no doubt' rhetoric towards teachers as researchers, wishes to retain the distinction between the practical research of teachers and the academic research of university researchers (Hammersley, 1997: p. 155). While I have no problem with Hammersley's wish to retain such a distinction, I think the tone of his argument, especially in regard to teachers, betrays an allergy to letting what he views as 'theory' come too close to what he views as 'practice'. My own belief is that it is eminently possible to retain a distinction, if one wishes, between the practical research of teachers and the academic research of university researchers and also believe in the possibility of teachers creating their own educational theory in an *a posteriori* fashion from and through their practice as I will attempt to do in my thesis.

In my particular dialogue with the above limited selection of literature from the Republic of Ireland, the United States, and Britain regarding the constitution of a teacher's knowledge base, the role of 'foundation' disciplines within that knowledge base, and the role (real and potential) for teachers to engage in educational research and knowledge construction relating to their teaching practice, I think it is easy to discern that a massive counter-cultural push is still needed in all three countries for teachers engaged in researching their own practice to gain recognition as educational researchers capable of creating educational theories.

One final point, Hargreaves's (1997: p. 412) pluralist acknowledgement, mentioned above (page 39), that a diversity of research approaches is most likely to produce high quality



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applications *and* a scientific infrastructure partially<sup>1</sup> echoes Sugrue's and Ui Thuama's (1994) pluralistic approach to educational research stated earlier (page 17):

*It is generally accepted internationally, as evidenced by the title of the AERA publication, Complementary Methods, that to provide a comprehensive picture of any educational system, it is necessary to conduct different kinds of research from a variety of perspectives, employing different modes of enquiry. In the absence of this a very one-sided version of the multiple realities of schooling is likely to emerge. (Sugrue's and Ui Thuama, 1994: p. 121)*

Whilst I fully acknowledge that my particular contribution is but a small part of the comprehensive picture of the 'world' of education in the Republic of Ireland, I think its relative smallness in these terms will not unduly deflect attention from its potential significance as an original contribution to knowledge construction in relation to (i) more democratic actions in the classroom, (ii) more socially just actions in the classroom, (iii) a greater understanding and appreciation of a student's 'conceptual vision' as an individual learner of a specific subject in the classroom, and (iv) a more profound recognition and acceptance (e.g. by the academy, by policy-makers, by the state, and by teachers themselves) of the capacity of an individual teacher to dialogically create/articulate a significant part of her/his own knowledge base in teaching - that is, to create his/her own educational theory.

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<sup>1</sup> I write 'partially' because Sugrue and Ui Thuama (1994) by no means infer 'a scientific infrastructure' for the diverse approaches to educational enquiry to which they lend support. In my view, both the humanities and the social sciences have a role to play in helping to form and inform teachers' knowledge bases.

## Chapter Three: My Action Research and Standards of Judgement

### 1. Three Working Definitions of Action Research

Since April 1994, two months after I began my action research, I have been attracted to the improvement focus within the following definition of action research:

*Action research is - a form of self-reflective enquiry<sup>1</sup> undertaken by participants in social (including educational) situations in order to improve the rationality and justice of (a) their own practices, (b) their understandings of these practices, and (c) the situations in which the practices are carried out. (Carr and Kemmis, 1986: p. 162)*

I fully appreciate that the notion of '*rationality*' is a highly contested notion in an era of high modernity<sup>2</sup> and postmodern challenge. Nonetheless, consistent with the singularity-study nature of my enquiry, I maintain, in agreement with Giddens:

*'that the rationalization of social action is a skilled accomplishment tied to particular social contexts'* (Tucker, 1998: p. 80).

Indeed, consistent with this emphasis on a contextual, but dynamic, view of rationality, Carr (1995) claims that '*there are no universal standards of rationality external to history and tradition*' (Carr, 1995: p. 81). Further, it seems to me that the following quote implies that Kemmis (1996) supports, as I do, a contextual notion of rationality within action research:

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<sup>1</sup> Following Lawrence Stenhouse, I prefer the phraseology '*systematic, critical, and self-critical enquiry (made public)*'. [Bassey (1995: p. 2)]

<sup>2</sup> I borrow this term from Giddens (1991: pp. 10-34), whom I view as an astute reader of the 'signs of the times' in which we are living.

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*When this 'we' is used in purportedly emancipatory-critical theorising as a universal category, there is no doubt that it involves a 'prodigious abstraction' (Habermas, 1990a: pp. 212-213) which obscures differences between people, groups, cultures and interests. (Kemmis, 1996: pp. 231-232)*

Another definition of action research that appeals to me is from Hopkins's *'A Teacher's Guide to Classroom Research'*, a book that made a great impression on me when I first read it in April 1994:

*Action research combines a substantive act with a research procedure; it is action disciplined by enquiry, a personal attempt at understanding while engaged in a process of improvement and reform. (Hopkins, 1993: p. 44)*

Finally, I have garnered the following definition of educational action research from Bassey (1995):

*'action research is systematic, critical and self-critical enquiry' made public, which is carried out by practitioners and 'aims to inform (their) educational judgements and decisions in order to improve educational action'. (Bassey, 1995: p. 2 and p. 46)*

As noted earlier [Footnote 2, page 32], I have learned from Lonergan (1972: pp. 3-25) to appreciate a particular view of the dynamic structure of human consciousness, of rationality, of the human mind, and of the human being as a knower, which includes an appreciation of experiencing, understanding, judging, and deciding as key dynamic 'operations' within that 'structure'. Indeed, it is fair to say that Lonergan has had quite a profound influence on my own understanding of what I mean when I say I know, or come to know, something. Of particular importance is Lonergan's claim that it is the 'notion of being', articulated in the transcendental precepts be attentive (experiencing), be intelligent (understanding), be reasonable (judging) and be responsible (deciding), which functions as the normative criterion in knowing<sup>1</sup> (O' Shea, 1995: p. 38). It seems to me that the above definition of educational action research, which I have garnered from Bassey (1995) and

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<sup>1</sup> Although it is beyond the scope of my thesis to justify or refute 'objectively' that the 'notion of being' is 'the normative criterion in knowing', I consider the 'notion of being' to be a highly significant criterion in my own contextual coming-to-know in my enquiry.

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which places a strong emphasis on understanding, judging, deciding, and acting, sits comfortably with Lonergan's notion of human rationality. Indeed, Bassey, following Stenhouse, defines research as '*systematic, critical and self-critical enquiry which aims to contribute to the advancement of knowledge*' (Bassey, 1995: p. 2). Whilst I fully realize that many differences and debates arise with the variety of meanings given to '*the advancement of knowledge*', the focus in this thesis is on my own stance as a knower who is coming-to-know: further, my own educational theory is 'defined' cumulatively throughout the course of my thesis.

From the above, it can be inferred that I value the notion of a contextual human rationality within a singularity-study educational action research enquiry. In my thesis, there is a particular emphasis on my *own* contextual human rationality<sup>1</sup>. Not surprisingly, I consider the central focus on '(improving) *the rationality and justice of*' within Carr's and Kemmis's definition of action research (Carr and Kemmis, 1986: p. 162)<sup>2</sup> to be eminently relevant for my own enquiry. Highly consistent with my prizing of one's own human rationality is my utilization of Whitehead's notion of '*unit of appraisal*' (Whitehead, 1993: p. 54), where a central **unit of appraisal** within my action research work is my claim to know my own educational development. This unit of appraisal is included in my overarching research question for my thesis:

*How do I create my own educational theory in my educative relations  
as an action researcher and as a teacher?*

It is included in the sense that when I create my own educational theory I am describing and explaining my own learning and some of the learning of my students that occur during my enquiry as I attempt to improve my practice and my understanding of my practice.

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<sup>1</sup> While my language may be somewhat objectifying my meanings here, I believe it is important to appreciate that I do not see my own human rationality as something totally disconnected from me as a person or from the dialogic contexts in which I work.

<sup>2</sup> See page 42.

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At this juncture, it seems to me that a most appropriate question to ask is, 'How can I or the reader make judgements about improvements in the rationality and justice of (a) my own practices and (b) my understandings of these practices. The practices I have in mind are my teaching and action research practices [which include thesis submissions I and II]. Asking the question in another way, and drawing further on some of Jack Whitehead's influence in my work, 'How can I or the reader make judgements about the descriptions and explanations that I offer for my own educational development (and some of the educational development of my sixth form students) over the time of my enquiry (1994-1999) as I ask, and respond, in particular, to the question, "How can I help you to improve your learning?"' (Laidlaw and Whitehead, 1995: p. 2)? There arises, therefore, the notion of some of the **standards of judgement** (Whitehead, 1993: p. 54) by which I wish my work<sup>1</sup> to be judged by myself and by a reader of my thesis.

### 2. Standards of Judgement

Before suggesting to the reader some contextual standards of judgement by which I wish my work to be judged and which I consider to be particular to my enquiry, I wish to fully acknowledge the importance of the following three examination criteria mentioned in the 1999-2000 Handbook for Research Students for PhD candidates at the University of Bath [Handbook, page 40]<sup>2</sup>:

The work (written thesis and oral examination):

(a) shows evidence of industry, application and scholarship,

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<sup>1</sup> The following are four overlapping arenas which I consider to be part of my work and which I view as a central 'unit of assessment' in my enquiry: (1) my research report (my thesis), (2) my claim to know my own educational development (and some of the educational development of my sixth form students), (3) the action research process I attempt to live with others, and (4) my teaching practices which act as incentives to action research [Whitehead (1993: p. 54) and Lomax (1994: p. 115)].

<sup>2</sup> Regarding the fourth standard of judgement mentioned in the Handbook, my work contains material worthy of publication. In April 2000, I had a paper published in *Irish Educational Studies*, Vol. 19, Spring 2000, pp. 120-138, based on some of my work for this thesis. This paper is included in the Appendices.

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- (b) forms a distinct and original contribution to knowledge, and
- (c) displays knowledge and understanding of the relevant literature.

In relation to the second standard of judgement above, I think it is worth stating at the outset that if a central unit of appraisal in my thesis is my claim to know my own educational development and if a central task in my action research enterprise is to create my own educational theory (Whitehead, 1993), then, not surprisingly, I intend my work to form a distinct and original contribution to knowledge - however contested the notion of knowledge may be.

### *My Particular Contextual Standards of Judgement*

This brings me to my own particular contextual standards of judgement which constitute some of the standards of judgement by which I wish my work to be judged by a reader<sup>1</sup>. I think it is worth stressing that these standards of judgement evolved in my practices and understandings over time (1994-2000). The informational bases - my four singularity studies and, especially, my thesis - on which the particular contextual evaluative judgements<sup>2</sup> are to be made, also evolved in an emergent-design fashion.

**Acknowledging this dynamic complexity, and the human struggle involved in experiencing and coming to appreciate this kind of complexity, the following are the standards of judgement which I believe are central to a just appreciation of my enquiry:**

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<sup>1</sup> Clearly, I respect the freedom of the reader to bring other standards of judgement to my work.

<sup>2</sup> Borrowing from Sen (1992) and stating it simply, if I am to make a judgement - an '*evaluative judgement*' - I need some information. This information constitutes the '*informational basis*' of that judgement (Sen, 1992: p. 73). I am taking information to mean data which has been given meaning.

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**I. Methodological Standards of Judgement.**

**II. Educational Standards of Judgement.**

**III. Social Standards of Judgement.**

I will expound on these criteria sequentially.

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|---|
| <b>I. Methodological Standards of Judgement</b> |
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### *Action-Reflection Cycle*

Firstly, it is important to state that in my first three studies of singularities [1994 (chemistry), 1995 (mathematics), and 1996 (chemistry)] I asked sixth form students (17-18 year-old students) to suggest ways in which they felt I could improve my teaching, thereby eliciting/creating a number of teaching/learning communicative activities which I would attempt to live out more fully with my sixth form students in my teaching practice over an 8-10 week period. In my fourth singularity study [1997 (mathematics)] I eventually concentrated on helping one sixth form student whom I believed was one of the most 'disadvantaged' students in a group of sixth form mathematics students.

Drawing on the work of Whitehead (1993), in my four studies of singularities I utilized systematic action-reflection cycles [using Popper's views on the method of scientific discovery (Whitehead, 1985 in Whitehead, 1993: p. 57) but significantly transformed by Whitehead's notion of *living contradiction* and the primacy of 'I' as an active agent of consciousness<sup>1</sup>] which constituted a method for improving my practice and for bringing my enquiry forward. The cycle is:

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<sup>1</sup> For me, both action and consciousness are important.

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- *I experience a concern/problem when some of my educational values are negated in my practice.* [problem]
- *I imagine a solution to my problem.* [idea]
- *I act in the direction of a chosen solution.* [action]
- *I evaluate the outcomes of my actions.* [evaluation]
- *I modify my problems, ideas and actions in the light of my evaluations.*

[Whitehead, 1985: p. 54]

I followed this methodology in my four singularity studies, along with the criterion of dialectical logic where I worked to negate the '*living contradiction*' aspects associated with the first step of the above action-reflection cycle - for example, the '*living contradiction*' aspects of me not living **LI, ECSTOT, ECTW, GS, IQ and SU**<sup>1</sup> sufficiently while valuing living the six teaching/learning communicative activities more fully in my 1995 singularity study (Singularity Study Two: p. 88).

In relation to my writing, it is also worth noting that the 'headings' of the main sections of my four singularity studies in my Singularity Study Record [Appendices (pages 301, 325, 334, and 346)] harmonise with the steps in the above action reflection cycle and with some of the chapter headings in David Hopkins's book, '*A Teacher's Guide to Classroom Research*' (Hopkins, 1993: p. ix), a book I studied with great care in April 1994 and which helped me enormously in my understandings when beginning action research.

**Pages 61-74 and pp. 295-300 show six action-reflection cycles for my four singularity studies and for my two thesis submissions.**

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<sup>1</sup> These abbreviations are explained on page 109.



## Part One

### *Triangulation*

In all of my singularity studies (1994, 1995, 1996, and 1997) I have been in dialogue with sixth form students, critical friends, and key respondents. For example, the first edition of Singularity Study One (written in June 1994) was read by five key respondents<sup>1</sup>. The second edition of Singularity Study One (written in June 1996) was read by Jack Whitehead and Hugh Lauder of the University of Bath. I wrote the third edition in January 1998 and this is in my Singularity Study Record which constitutes the main data base off which I theorise in my Singularity Study Report (my thesis). All editions of Singularity Study One are in my Data Archive. The second editions of my other three singularity studies which were written in January-March 1998 are also in my Singularity Study Record, whilst all editions of these studies are in my Data Archive. So, my thesis has grown in the following way:

**Data Archive → Singularity Study Record → Singularity Study Report [My Thesis].**

Regarding face-to-face critical friends, there was more frequent and higher quality contact in my second (1995 - mathematics) and fourth (1997 - mathematics) singularity studies than in my first and third singularity studies. In my first study, two critical friends each observed 10 minutes of a chemistry lesson (one in the classroom and one in the laboratory) and in my third study, a sixth form student videoed a laboratory session which Paraig Cannon observed<sup>2</sup>.

The following excerpt indicates the kinds of triangulations utilized during my 1995 singularity study:

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<sup>1</sup> Jim Callan (University of Maynooth), Jack Whitehead (University of Bath), Ben Cunningham (Marino Institute of Education, who completed his PhD at the University of Bath in 1999), Billy Ward (Deputy Principal in a local convent secondary school), and Joe English (a teaching colleague and critical friend from St. John's College but now on secondment for Curriculum Development with the Department of Education and Science).

<sup>2</sup> Paraig was then (1996) teaching in a primary school but is now (since November 1998) lecturing as a teacher-educator to those training to be primary school teachers in Marino Institute of Education, Dublin.

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*I contend that I have engaged in triangulation (Denzin, 1978 in Forward, 1989: p. 35) of: evaluators [students, Joe (a working colleague and a critical friend), and myself]; sources of data (questionnaires, audiotapes, videotapes, observations); methods for a single event [for example, Thursday, January 12th, 1995, students writing on their own, followed by groupwork, followed by an open discussion, and finally followed by an audiotaped conversation with Ronan (a sixth form mathematics student and a critical friend) on Friday 13th]; and, finally, of different perspectives to interpret data (I utilize some statistical analysis within a qualitative action research mode of enquiry). [Singularity Study Two: p. 89]*

Additionally, in all four singularity studies, the sixth form students and I engaged in 'time triangulation', where data were collected from the same groups at different points in the time sequence (Cohen and Manion, 1994: p. 236) during the action-reflection cycles.

### *The Rigour of My Methodology*

Firstly, I believe two of Winter's suggested six principles for the rigorous conduct of action research act as a testing ground against which to judge some of the rigour of my work. These are: (i) Collaborative Resource and (ii) Risk (Winter, 1989: pp. 38-68).

(i) I am taking 'Collaboration' to mean:

*everyone's point of view will be taken as a contribution to resources for understanding; no-one's point of view will be taken as the final understanding as to what all the other points of view really mean. (Winter, 1989: p. 56)*

I think the reader will grow to appreciate the way in which I have accommodated and not eclipsed the 'voices' of others in my thesis, whether the other is a student, a critical friend, a key respondent, or a researcher in the literature. The last-mentioned example, strictly, extends my work beyond Winter's notion of 'Collaborative Resource'. However, it is incorporated into one of my educational standards of judgement ahead [pp. 52-53].

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(ii) Regarding 'Risk', I took the risk of asking senior students to suggest ways in which I could improve my teaching practice in 1994, 1995, and 1996. I found this somewhat nerve-wracking and experienced a moderate to high degree of personal and professional vulnerability in initiating the action research process each year where I attempted to elicit 'living contradiction' elements in my teaching practice<sup>1</sup> which some of the students felt I needed to work on as one way of helping them to improve their learning. Also, there was some risk involved in having my accounts, ideas, and practice subjected to critique by critical friends and key respondents. For example, Professor Hugh Lauder gave me some important critical feedback on Chapter Eight, which I respond to in Chapter Nine.

Secondly, I contend that I have engaged in 'Reflexivity' in the process of writing my singularity studies<sup>2</sup> and my thesis. Just as there is an in-built reflexive process within the action-reflection cycle so too is there a reflexive process at work in my writing where I am constantly reflecting back critically on previous critical reflections.

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<sup>1</sup> The teaching activities on page 78 and page 109, for example.

<sup>2</sup> As already noted [page 49], I wrote three editions of my first singularity study and two editions of each of the other three studies of singularities and that the final editions constitute my Singularity Study Record (330 pages, single spacing) which is the main data base for my thesis.

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### II. Educational Standards of Judgement

#### *A. Educational Standards of Judgement Relating to Democracy, Social Justice, and a Greater Appreciation of a Student's Conceptual Vision*

Three of my educational standards of judgement by which I wish my work to be judged connect to three central themes articulated and developed in Part Two, Part Three, and Part Four of my thesis, respectively. The following questions arise:

- Do I truly engage in more democratic actions in the classroom as I help my sixth form students to improve their learning? [Part Two]
- Do I genuinely partake in more socially just actions in the classroom as I help some of the most 'disadvantaged' students to improve their learning? [Part Three]
- Do I communicate a greater appreciation of a sixth form student's conceptual vision in mathematics in my fourth singularity study as I help one of the most 'disadvantaged' students to improve his learning? [Part Four]

My fourth educational standard of judgement, which I term an educative-relational standard of judgement, flows naturally for me from a combination of the above three criteria.

#### *B. My Educative-Relational Standard of Judgement*

##### *The Dialogic Aspect*

Elliott (1989), in relation to reflecting about one's practice in private and participating reflectively in practical public discourse, claims:

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*'a process of private reflection should operate concurrently and interactively with a process of public dialogue. But — the capacity for private self-reflection is ontologically prior to the capacity to self-reflect in public.'* (Elliott, 1989: p. 99)

Reflecting on the above quote, which is part of Elliott's (1989) incisive analysis of some of Whitehead's (1989) work, I framed the following dialogic standard of judgement in July 1997 when writing up my fourth study of a singularity:

*Along with my ontologically prior dialogic reflections with self do I engage in sufficiently high quality dialogic reflections with others [sixth form students, critical friends, key respondents, and researchers in the literature] in my educational action research enquiry?* (Singularity Study Four: p. 104)

### *The Particular Dynamic Nature of My Dialogue*

Building on the above standards of judgement [pp. 52-53], **my educative-relational standard of judgement** for my enquiry is:

**When creating my own educational theory, alongside my dialogic reflections with self, do I engage in sufficiently high quality dialogic reflections with others [students, critical friends, key respondents, and researchers in the literature] in a way which shows a sustained and growing commitment<sup>1</sup> to democracy, social justice, and an appreciation of the other's conceptual vision?**

I am taking 'conceptual vision' in its broadest sense to include cognitive and affective understandings. In my dialogic reflections with self I am comfortable with the notions of the thinking and feeling parts of my mind, which I tend not to separate.

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<sup>1</sup> Footnote 2, page 23, is relevant here.

### III. Social Standards of Judgement

Following the influence of Habermas on Whitehead (1993: p. 55 and 1998: p. 4)<sup>1</sup>, the social criteria<sup>2</sup> I choose for judging my account are Habermas's validity claims for argumentation in discourse which can be analysed and tested only discursively (Carr and Kemmis, 1986: p. 141). While I acknowledge that there are social dimensions to the standards of judgement described and explained above, my concern in the present criteria is with a particular mode of language use I employ in my thesis where I make an assiduous effort to say something to an other (e.g. a student, a critical friend, a key respondent, the reader) '*in a way that allows [the other] to understand what is being said*' (Habermas, 1990: p. 24). This contrasts with, and extends beyond, a second mode of language use identified by Habermas, where '*one says what is or is not the case*' (Habermas, 1990: p. 24). It is important to recognise that I employ the two kinds of language use in my thesis but that I stress the importance of the former as it is more dialogic than, and can incorporate, the latter. I am in agreement with Habermas (1990) who maintains:

*In everyday life we agree (or disagree) more frequently about the rightness of actions and norms, the appropriateness of evaluations and standards, and the authenticity or sincerity of self-presentations than about the truth of propositions. That is why<sup>3</sup> the knowledge we use when we say something to someone extends beyond strictly propositional or truth-related knowledge.* (Habermas, 1990: p. 27)

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<sup>1</sup> Although Whitehead draws on the work of Habermas in Whitehead's utilization of social criteria for judging claims to knowledge, it is important to recognise that living educational theory, whilst critical and creative, is not a critical social science like that employed by Carr and Kemmis who also draw on the work of Habermas (Carr and Kemmis, 1986: pp. 134-150).

<sup>2</sup> After a query from me, asking why he chose the term 'social' [rather than, say, 'communicative'] for the criteria he adapted from Habermas in Whitehead (1985), Jack Whitehead responded: '*I chose social criteria because I wanted to emphasise that as well as the personal criteria I used from personal knowledge I also wanted to submit my accounts for public criticism. --- I liked the idea of using both my own personal criteria from the base of my personal knowledge and the idea of emphasising a social influence on my knowledge claims through a process of public accountability using Habermas' four criteria. I've found them really helpful as part of the heuristic process of taking my enquiry forward.*' [email, May 19th, 2000].

<sup>3</sup> In my view, the preceding 'reasons' proffered by Habermas are by no means the only justification for Habermas's 'conclusion' here.

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Habermas (1984) argues that when language is used for reaching an understanding with an other [not necessarily involving final agreement (Habermas, 1990: p. 24)], the following ‘musts’ constitute the validity basis of such communicative action:

- *The speaker must choose a comprehensible expression —*
- *The speaker must have the intention of communicating a true proposition —*
- *The speaker must want to express his(/her) intentions truthfully so that the hearer can believe the utterance of the speaker [can trust him(/her)].*
- *Finally, the speaker must choose an utterance that is right (appropriate, legitimate, justifiable<sup>1</sup>) — (Habermas, 1984: pp. 2-3).*

These four social criteria can be collapsed, if necessary, to (i) comprehensibility, (ii) truth, (iii) authenticity, and (iv) appropriateness. However, it is important that this ‘collapsing’ does not give the mistaken impression that the intended meanings within Habermas’s ‘communicative actions’, or within my own dialogic-coming-to-know approach in my thesis, are limited solely to propositional knowledge. The following are the kinds of questions I have in mind when applying the above social standards of judgement to my account and my claims<sup>2</sup>:

- (i) Is my report comprehensible?
- (ii) Is there sufficient evidence to support my claims?
- (iii) Does my account offer an explanation for my educational development which shows a sustained commitment to living prized values more fully over time (e.g. making room for the ‘voices’ of others) in my teaching and action research practices?
- (iv) Are the meanings of the values shown and justified (i.e. appropriate) in the course of their emergence through practice (i.e. my teaching, my action research, and my writing of my account)?

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<sup>1</sup> These ‘synonyms’ for ‘right’ are proffered by the translator, Thomas McCarthy (Habermas, 1984: pp. xviii-xix).

<sup>2</sup> I have drawn on Whitehead (1998: p. 4) when formulating these questions.

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**October 27th 1999 Comment: Pages 299-300 of the Appendices show that I am more fully living out these social standards of judgement in the second submission of my thesis, especially in relation to (i) the comprehensibility of my report (my thesis), (ii) truth (i.e. more evidential support for some of my claims and statements), and (iv) the appropriateness of what I write.**

### *Summary*

The above (I) methodological, (II) educational, and (III) social criteria are my own particular contextual standards of judgement and constitute some of the standards of judgement by which I wish my work to be judged by myself and by a reader. Focusing more incisively, it is important to appreciate that these criteria are both (a) values that I attempt to live out more fully in my account and my practices and (b) some of the standards of judgement by which I wish the validity of my claims to knowledge to be judged by a reader of my thesis<sup>1</sup>. Consistent with the singularity-study nature of my work, the 'validity' I have in mind is mostly 'internal validity' or credibility (Lincoln and Guba, 1985: pp. 290-296), which is a term I prefer, and which Ely regards as the '*bedrock of trustworthiness*' in qualitative research (Ely, Anzul, Friedman, Garner, & McCormack-Steinmetz, 1991: p. 156). However, I also address the notion of 'external validity' or - terms I prefer - transferability (Lincoln and Guba, 1985: pp. 296-298) and relatability (Bassey, 1995: p. 111), in Chapter Twelve, along with the notion of 'What's in My Work for Others?'.

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<sup>1</sup> Communicating a similar double dynamic perspective towards criteria, Eisner has recently (December 1998) argued '*that the criteria to be applied to any form of work should be guided by the features of the work itself*' (Suppes, Eisner, Stanley & Greene, 1998: pp. 33-35). Eisner argues thus: *One does not apply criteria appropriate for appraising the quality of cubist painting by importing criteria that are appropriate for impressionist works of art. Wisdom in this matter consists of understanding the genre and using criteria that suit it.* (Ibid: p. 34)



## Chapter Four: My Four Studies of Singularities - A Summary

### *What is a Study of a Singularity?*

Bassey (1995: p. 7) maintains that the search for generalisations and the study of singularities probably constitute the most important dichotomy in social research. In Bassey's conception of the term, a 'study of a singularity' embraces

*virtually every kind of empirical study other than where the subjects of study have been carefully selected as a representative sample of some population about which it is intended to make general statements. (Bassey, 1995: p. 112)*

It constitutes research into a set of particular events:

*When we decide that something is sufficiently significant to warrant being researched, it is usually not just one particular event but a set of related particular events that are the focus of interest. This means a set of events around which a boundary can be drawn. Strictly speaking, of course, it is the anecdotes describing the events with which we are concerned. The boundary can be defined in space and time, for example as a particular classroom, or school, or local authority, or as sets of these, in a particular period; or it may be defined as a particular person, or group of people, at a particular time and in a particular space (Bassey, 1995: pp. 110-111).*

It appears that the main reason why Bassey (1995: p. 112) opts for the term *study of a singularity* rather than *case study* is to distinguish between a study as 'a bounded system' and the notion of case study which places a strong emphasis on enquiry leading to generalisations. A definition of the latter notion of case study is proffered by Cohen and Mannion (1980) in their text *Research Methods in Education* (and repeated in the 4th edition of 1994: pp. 106-107):

*Unlike the experimenter who manipulates variables to determine their causal significance or the surveyor who asks standardised questions of large, representative samples of individuals, the case study researcher typically observes the characteristics of an individual unit - a child, a class, a school, or a community. The purpose of such observation is to probe deeply and to analyse intensively the multifarious phenomena*

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*that constitute the life cycle of the unit with a view to establishing generalisations about the wider population to which that unit belongs.* (Cohen and Mannion, 1994: pp. 106-107)

While I will later address the notions of *transferability* (Lincoln and Guba, 1985: p. 124), *relatability* (Bassey, 1995: p. 111), and *generalisability* (Whitehead, 1993: p. 73; Lomax, 1994: pp. 118-119) in Chapter Twelve, the *primary purpose* in my enquiry is *not* to establish generalisations about the wider populations to which the groups of sixth form students whom I have worked with belong, but to make meaning in particular contexts as I seek to improve my practices. On this basis, I adopt Bassey's choice of term for my kind of enquiry and therefore hold that I have engaged in *studies of singularities* rather than *case studies*<sup>1</sup> during 1994-1997.

Below I give (i) the duration of data gathering for each of my studies, (ii) the titles of my reports; I also provide (iii) action-reflection-cycle summaries of my four singularity studies.

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<sup>1</sup> Admittedly, Bassey (1999: p. 25) acknowledges that not all commentators see generalization as an essential outcome of case-study work.

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Table S.1 below<sup>1</sup> displays the duration of data gathering for Studies 1, 2, 3, and 4<sup>2</sup>.

**Table S.1. Studies of Singularities and Duration of Data Gathering.**

| Study | Academic Year | Students  | Duration of Data Gathering    |
|-------|---------------|---|-------------------------------|
| 1     | 1993/1994     | 21 Sixth Form Chemistry Students  | Mar 8th '94 - May 17th, '94   |
| 2     | 1994/1995     | 23 Sixth Form Mathematics Students  | Jan 12th, '95 - May 22nd, '95 |
| 3     | 1995/1996     | 11 Sixth Form Chemistry Students  | Nov 23rd, '95 - May 17th, '96 |
| 4     | 1996/1997     | One Sixth Form Mathematics Student within a group of 13 Sixth Form Mathematics Students | Oct 8th, '96 - May 19th, '97  |

I wrote the four reports for Studies 1, 2, 3, and 4 in the summers of 1994, 1995, 1996, and 1997 respectively. Their titles are displayed in table S.2 below. To my mind this is one way of seeing some of the whole picture before zooming in on particular pathways through my enquiry where two of my primary purposes are (i) to help my students to improve their learning as I work at improving my teaching [improving my practice],

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<sup>1</sup> Tables with primary label S occur in Chapter Four. In the remainder of my thesis, tables with primary labels S1, S2, S3, and S4 refer to tables constructed for my first, second, third, and fourth singularity studies respectively; tables with primary label S5 refer to tables constructed for my development of theory in my thesis.

<sup>2</sup> I focus on these four studies of singularities because in them I am looking at my teaching and the students' learning of mathematics and chemistry in the classroom. Also, the sixth form students sat their Leaving Certificate tests in these subjects at the end of the respective school years, thereby allowing public examination results to be one indicator of improved/disimproved learning. Another reason for focusing on these four singularity studies is that their nature (e.g. sixth form students, chemistry and mathematics) and timing (1994, 1995, 1996, and 1997) allow for greater comparison over time during my enquiry.

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(ii) to grow in my own understanding of how I help my students to improve their learning as I work at improving my teaching [improving my understanding of my practice].

**Table S.2. Studies of Singularities and Titles of Reports.**

| Study | Year | Students  | Title of Report  |
|-------|------|---|--|
| 1     | 1994 | 21 Sixth Form Chemistry Students  | A Venture into Classroom Research                            |
| 2     | 1995 | 23 Sixth Form Mathematics Students  | A Dialogic Venture into Classroom Action Research            |
| 3     | 1996 | 11 Sixth Form Chemistry Students  | A Way of Knowing My Committed Service in Education           |
| 4     | 1997 | One Sixth Form Mathematics Student within a group of 13 Sixth Form Mathematics Students | A Story of Some of Hugh's Learning in Sixth Form Mathematics |

In the remainder of Chapter Four, I provide an action-reflection-cycle summary of each of these four singularity studies [1994-1997]. Richer analyses of the studies will come later in the thesis [thereby explaining some of the forward-referencing in my summary]. Two centrally important points which I wish to draw the reader's attention to in relation to the summaries which follow are: (i) a spiral of action-reflection cycles occurs in these studies, and (ii) the singularity studies, which are not without theory, constitute the main data base off which I theorise in my thesis.

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### Singularity Study One [Mar 8 1994 - May 17 1994]

#### Context

21 sixth form chemistry students and I revised the chemistry course [of physics/chemistry combined taken as a single subject] between March 1994 and May 1994, doing lots of examination questions from the 1989-1993 Leaving Certificate papers.

#### Action-Reflection Cycle

#### Problem

10 out of 21 sixth form students failed a Nov 1993 chemistry test on recent material. The same 10 students along with 3 others failed a longer Feb 1994 chemistry test on the whole course. 9 out of these 13 students were dissatisfied with my chemistry teaching [responding to Q.15 of QUEST1 in the Appendices (page 302)].

#### Imagined Solutions

Consistent with the thematic emphasis in my thesis on teaching/learning communicative activities, the eight activities on page 78 constituted the main set of imagined solutions for the 1994 study. However, other specific imagined solutions were: (i) We initially concentrated on examination questions in content areas that the students said were problematic for them [Appendices (page 308)], (ii) 4.5 hours of extra time were created for chemistry lessons, (iii) We used a special kind of groupwork twice, once in the laboratory and once in the classroom, where the students with better results were grouped with those of poorer results [page 160].

#### Implementation of Imagined Solutions and Gathering Further Evidence

Here, the main focus was on the 8 activities on page 78. I monitored my teaching practice in the eight areas [table S1.4 of Appendices (page 307)] in order to appraise my own practice but, in particular, to raise my own consciousness. Valuing triangulation, I gave the students three feedback sheets, FB1, FB2, and FB3, in March, April and May respectively. *They were given at the end of a double period without prior notice.* This was one way in which I attempted to raise the students' consciousness regarding the improvements I was trying to bring about in my teaching practice. Also of relevance in this part of the action-reflection cycle are: the Final Questionnaire (FQ) [Appendices (pp. 314-315)], the chemistry test given the following day (May 17 1994) [comparative results in Appendices (page 321)], and feedback comments from three repeating sixth form chemistry students obtained in late May 1994 [pp. 107-108 of thesis].

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### **Evaluation**

#### *My Teaching*

The responses from the three repeating sixth form chemistry students (Paul, Darren and John) [pp. 107-108 of thesis], the students' increased satisfaction with my teaching between March 1994 and May 1994 [table S5.1, page 104 of thesis and Appendices (page 316)], their improvement ratings for my overall chemistry teaching (mean = 1.57) [Appendices (page 316)], and, of central thematic importance for my thesis, the students' improvement ratings for 7 of the 8 teaching/learning communicative activities [page 78 of thesis and Appendices (page 314 and pp. 317-318)], all point to a significant improvement in my teaching practice during this study.

#### *The Students' Learning*

The students' increased satisfaction with their chemistry learning in the classroom and at home between March 1994 and May 1994 [table S5.1, page 104 of thesis, and Appendices (page 316)], the particularly important student ratings for their improvement in chemistry learning in the classroom and at home (means = 1.86 and 1.76 respectively) [Appendices (page 316)], the subsequent May chemistry test results [Appendices (pp. 321-322)], and the subsequent June Leaving Certificate results in the physics/chemistry combined test [Appendices (page 324)], all point to improved chemistry learning for the majority of the 21 sixth form students during the first singularity study.

**The above two paragraphs support the claim I make on page 105 of my thesis.**

#### *Values*

Participatory democracy, greater social justice, students more fully realizing their potentials in chemistry learning, and respect for students and their views about change were some of the central values lived out more fully in this study.

#### *Variety of Sources of Data*

There was a variety of sources of data: questionnaires, short interviews, own journal, two observations [page 160 of thesis and Appendices (pp. 310-313)], written reports (students), and a little document analysis (focusing on verbs used in examination questions).

### **Modifications**

(i) After 1994 critical feedback from two key respondents, Jim Callan of Maynooth University (in particular), and Ben Cunningham of the Marino Institute of Education, Dublin, I subsequently fine-tuned my treatment of statistics in the second and third

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editions [June 1996 and January 1998 respectively] of my first singularity study, placing greater emphasis on underlying values and on qualitative aspects of the study.

(ii) The following excerpt from my 1995 report [Data Archive: Singularity Study Two, 1995: p. 174] gives an indication of some modifications in my methodological understandings and practices between my 1994 and my 1995 studies of singularities:

- *In the 1995 singularity study, I have used more of a dialogic approach in eliciting student needs [see top paragraph of page 50 of thesis] and in describing change.*
- *There have been more observations (structured and open) than last year and each observation has been longer [students, Joe English - a teaching colleague and a critical friend, two Austrian girls (visiting students), and Guido - a teacher from Germany].*
- *There have been audiotaped conversations with my students (twice) and with Joe English (twice), seeking feedback on the implementation of teaching/learning communicative activities: the videocamera has been used twice in class to gain data for this purpose.*
- *I have a deeper understanding of the action-reflection cycle (Whitehead, 1985: p. 54) and of the place of teaching/learning communicative activities as 'living contradiction' elements of my teaching practice within the action-reflection cycle: specifically, I more fully appreciate that the greater enactment of teaching/learning communicative activities constitutes the central web of imagined solutions in my 1994 and 1995 singularity studies.*

## **Part One**

### **Singularity Study Two [Jan 12 1995 - Mar 30 1995]**

#### **Context**

23 Leaving Certificate students were completing their higher level mathematics course - first time coverage and not revision as in the 1994 study. I wished to improve my methodology over the 1994 study by engaging in more dialogue with students and critical friends and also by utilizing audiotaped and videotaped material. I was more critically aware of issues of legitimation and representation.

#### **Action-Reflection Cycle**

#### **Problem**

The initial problem, which arose in an emergent-design fashion through interactive journalizing with one of the sixth form students (Ronan), was lack of question-asking by the sixth form group of mathematics students during lessons. Table S2.1 in the Appendices [page 327] provides evidential support for this concern.

#### **Imagined Solutions**

An open discussion with the students on question-asking led to some areas that I could work on in my teaching. The greater enactment of the six teaching/learning communicative activities [page 109 of thesis] constitutes the central web of imagined solutions for the 1995 study. The session on question-asking and the way in which the imagined solutions arose are described and explained in the Appendices [pp. 326-329].

#### **Implementation of Imagined Solutions and Gathering Further Evidence**

The following is a diary of, what I would view as, significant events:

- A.** Raising Consciousness --- My Own (between 12-01-1995 and 30-03-1995)
- B.** Raising Consciousness --- The Students' (between 12-01-1995 and 30-03-1995)
- C.** Video One (02-02-1995) and Feedback (five students, 'critical friend', self)
- D.** Observations by a Teacher from Germany (09-03-1995)
- E.** Video Two (30-03-1995) and Feedback (five students, 'critical friend', self)
- F.** Questionnaire (30-03-1995) [Appendices (page 330)]
- G.** Final Questionnaire (03-05-1995)
- H.** Comments from Two Students --- Kenneth (03-05-1995) and Ronan (22-05-1995)



## Part One

### Evaluating Our Actions - Further Analysis of Classroom Action Research Information

#### *Teaching and Learning*

Pages 109-113 of the thesis and pp. 330-333 of the Appendices support the following two overlapping claims from Singularity Study Two (1995: page 74 and page 77):

*My improved practice [slightly to a reasonable amount; the average of the mean values for the six key areas = 1.86] was a contributory factor in helping to bring about a slight to reasonable improvement in the majority of students' [20 students out of 23 students] understanding of mathematics [mean value for UM = 1.95] during the time of this action research enquiry [January 12th, 1995 until March 30th, 1995].*

*I believe my improved practice during this classroom action research enquiry contributed to the sixth form students' improved understanding of mathematics between February and June, and to their better examination results in June 1995.*

There is evidence of transferability between the 1994 and 1995 singularity studies on pp. 267-269 of the thesis [Chapter Twelve].

The following response from Kenneth, a sixth form mathematics student, on May 3rd, 1995, to a questionnaire on 'Taking More Responsibility', is a fair assessment of the power of influence of the students on my teaching practice during the 1995 project:

**Kenneth** *The project allowed in some ways a limited but constructive 'criticism' of a teacher's techniques, without inferring any insult or offence. This meant that our comments would affect the way in which we were taught, thus we had to be responsible in our attitudes and comments to take advantage of this.* [Singularity Study Two (1995: p. 78)]

While Joe (a teaching colleague) and Guido (a visiting teacher from Germany) gave structured feedback on the enactment of the teaching/learning communicative activities which was positive, they also gave open critical feedback on issues like teacher talk-time, tone of voice, humour (Joe), supporting curiosity, and developing ideas - not giving solutions too early (Guido). Although my awareness of these other issues was appreciably heightened, I did not systematically analyse them in my teaching practice.

#### *Methods of Data Gathering*

Triangulations, observations, audiotapes, videotapes, questionnaires, statistics, interactive journalizing, interviews, and a reflexive journal (my own) were employed as part of my methodology - a broader pattern than the 1994 singularity study.

## Part One

### *Standards of Judgement*

Drawing on the work of Lincoln and Guba (1985), I began to see credibility and transferability, particularly the former, as most appropriate criteria for my action research work. Following Whitehead (1993), and utilising some of Hopkins's ideas on validation - triangulations and key respondents (Hopkins, 1993), I gained a growing awareness of the importance of legitimating one's claims to knowledge and also felt it was important that teacher-researchers had the freedom dialogically to evolve their own set of criteria:

*Part of the struggle against oppressive constraints WITHIN classroom action research, it seems to me, involves battling against any tendency to create, what some researchers would call, sets 'of "technical" prescriptions as a means of controlling others' research' (Clarke, Dudley, Edwards, Rowland & Winter, 1993: p. 491). In the effort to create truly emancipatory criteria that are used to judge teacher-researchers' work, I believe it is vital to let teacher-researchers speak for themselves regarding what they consider to be appropriate standards of judgement for their work. [Singularity Study Two (1995: p. 101); also page 200 of the first edition of the 1995 study (August 1995) - Data Archive]*

### *A Particular Response to a Policy Aspiration*

Classroom action research such as the 1995 singularity study, being school-based and having a high level of student and teacher participation, is, in my view, one means of nurturing professional and personal development and lending support to the following policy aspiration from the Republic of Ireland White Paper on Education (Department of Education, 1995: p. 128):

*'Both in the literature and among many providers, there is a consensus that an effective and comprehensive programme of professional and personal development for teachers requires a diverse range of measures and a variety of providers. Additionally, the strong message emerging consistently from all quarters is that the approach to professional and personal development should be decentralized, school-focused and conducive to high levels of teacher participation in all aspects of the process.'*

### *Feedback from a Key Respondent*

On September 25th, 1995, I received the following as part of Jack Whitehead's reponse to my 1995 report:

*I liked the way you integrated the statistics work --- . I think you made your case for the way you worked to improve LI, ECSTOT, ECTW, GS, IQ, and SU [page 109 of thesis]. The dialogic quality which pervades your work shows the quality of the learning/educative relationships you are establishing with your students. --- I think you were right to stress (when in conversation with Joe English) [page 93 of the first edition of the 1995 study - Data Archive]:*

## Part One

*'I suppose it's a thing I'll have to be careful about - that it's not just about my teaching practice. The thing in the end - it's their understanding of mathematics and their learning. --- That really is the most important thing.'*

*You might like to think about how to get more on the inside of the growth in the students' learning and understanding of the curriculum area that you are interested in.* [Singularity Study Two (1995: p. 91)]

## Modifications

In the 1996 study there was more democratic participation by the students in contributing to the teaching/learning communicative activities than in the 1994 and 1995 studies [see pp. 78-79 of thesis and Appendices (pp. 335-336)] and I made a reasonable attempt to gather evidence of the sixth form students' improved learning in a specific area of chemistry (electrolysis) [pp. 116-117 of thesis and Appendices (pp. 341-344)]. On the statistical front, I asked the sixth form students for initial and final % assessments of the teaching/learning communicative activities so that I could use the *related t value* test of statistical significance and also make some judgement about the validity of the rating scale [page 113 of thesis] I had devised for the students' assessments of my changing practice. Regarding greater enfranchisement of the students' voices, towards the end of the 1996 study I had audiotaped conversations with all of the 1996 sixth form chemistry students [eleven students: 5 audiotaped conversations (with two, three, three, two, and one student, respectively)].

## Part One

### Singularity Study Three [Nov 28 1995 - Jan 30 1996]

#### Context

11 sixth form students were covering some first-time material from their higher level Leaving Certificate chemistry course. As well as eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities in this particular study, I attempted to get closer to improved student learnings in a specific content area of chemistry (electrolysis).

#### Action-Reflection Cycle

#### Problem

The high failure rate among the eleven sixth form chemistry students in their summer examination of 1995 was a serious cause of concern for me [page 161]: eight of the eleven students failed this pure chemistry test with six of the students scoring less than 30 %. Also, as noted above, there was the issue of trying to get much closer to specific improvements in student learnings than I did in the 1995 study. A more minor problem involved devising some means for testing a rating scale [page 113 of thesis] I utilized for the 1994/1995/1996 studies.

#### Imagined Solutions

Page 79 of the thesis and pp. 335-336 of the Appendices describe the way in which the central web of imagined solutions for the 1996 study - nine teaching/learning communicative activities - was elicited with the sixth form chemistry students by majority decision and by consensus.

#### Implementation of Imagined Solutions and Gathering Further Evidence

*Diary of Data Gathering Events* [1 and 2 are included to create a fuller picture]

1. **Foundational Questionnaire** [Appendices (page 335)] and **Chemistry Test One** (November 23rd).
2. **75-Minute Discussion with the Students** (November 28th).
3. **Member-Check Questionnaire** (November 29th) - Appendices (page 336)
4. **Percentages for the Nine Communicative Activities Questionnaire** (December 4th). I asked the following:

*Please rate your chemistry teacher's practice up to now for each of the following nine communicative activities [page 114] on a scale 0 ---100 - no more than two decimal*

## Part One

*places please! - using the same meanings that are applied when your tests are being corrected by teachers in the college.*

**5. Monitoring Questionnaire (December 12th).** I asked the students to rate my teaching practice for Disimprovement (D)/Same (S)/Improvement (I) for the nine teaching/learning communicative activities.

**6. A New Year Letter/Questionnaire from James Finnegan (January 9th).** Here I had five concerns - trust, truth, going over class work, understanding of electrolysis, and improvement in homework practice, if any.

**7. Gathering Evidence During a Project Questionnaire and Chemistry Test Two (January 18th).** The thematic considerations in this questionnaire were, no/yes for the nine communicative activities, written information on the students' changing (if there was a change) understanding of electrolysis, information on values the students perceived I was failing and succeeding to live out more fully. Test Two results (and Test One results) are in the Appendices (page 341).

**8. Video of Laboratory Practice (January 25th).** There were only eight students out of eleven students present. The video is a 35 minute recording and was made over a 75 minute session. The students and a 'critical' friend viewed the video and gave feedback.

**9. 'Final' Questionnaire (January 30th).** In this questionnaire I sought %'s and ratings (using the scale -5 to +5) for disimproved/improved teaching practice for (i) the nine communicative activities over the time of the project [page 114 of thesis]. I also asked the students to rate their disimprovement/improvement for (ii) understanding of chemistry, (iii) understanding of electrolysis, (iv) understanding of organic chemistry, and (v) homework practice [Appendices (page 345)].

**10. Consciousness Raising --- The Students' (28-11-1995 to 30-01-1996).** The nine communicative activities were mentioned explicitly in written form on:

- 28-11-1995 ----- Discussion Day.
- 29-11-1995 ----- Member-Check Questionnaire.
- 04-12-1995 ----- Percentages Questionnaire.
- 12-12-1995 ----- Monitoring Questionnaire.
- 09-01-1996 ----- Nine Codes On The Board.
- 15-01-1996 ----- Nine Codes On The Board.
- 18-01-1996 ----- Gathering Evidence Questionnaire.
- 30-01-1996 ----- 'Final' Questionnaire.

**11. Correction of Homework (H), Tests (T), and Practicals (P) [23-11-1995 to 29-01-1996].** Table S3.1 [Singularity Study Three (1996: p. 14)] displays these results.

## Part One

**12. Consciousness Raising --- My Own (28-11-1995 to 30-01-1996).** Along with the above 'interventions' (in item 10) with the students, I wrote the nine codes on the right hand side of the board and rated myself for the nine communicative activities on seven occasions [Table S3.2 of Singularity Study Three (1996: p. 14)]

**13. Five Audiotaped Conversations (late January - early February).** All eleven students were interviewed.

- David O and Jarlath T (29-01-1996)
- David M, Gary P and Paul R (31-01-1996)
- Afnan HZ, Aidan R and Kevin R (01-02-1996)
- Ethan G and James K (05-02-1996)
- Eamonn F (07-02-1996)

**14. 'Video Feedback from the Students' Questionnaire (April 19th).**

**15. Written Feedback from Eamonn F on the Issue of 'Too Controlling' (May 7th).**

**16. Audiotaped Dialogue with Paraig Cannon, a 'Critical' Friend who Viewed the Video (May 17th).**

A lot of information evolved from the above sixteen 'data gathering events'. In the evaluation section I will limit my analysis to what I regard as significant themes.

### **Evaluating Our Actions - Further Analysis of Classroom Action Research Information**

#### *My Teaching and the Students' Learning*

Table S3.8 [page 114 of the thesis] and the Percentage and Affirmative Tables on pp. 339-340 of the Appendices confirm:

*that I was quite effective in responding (over the duration of the project) to the students' elicited suggestions for particular changes to my teaching practice which the students believed would help their learning.* [Singularity Study Three (1996: page 53)]

Pages 115-118 of the thesis and pp. 341-346 of the Appendices lend support to my assertion that:

**my improved teaching practice helped to bring about improved chemistry learning for the majority of the students in the sixth form chemistry group over the duration of the 1996 enquiry.** [Singularity Study Three (1996: page 54)]

I contend that these improvements contributed to the improved chemistry results in table

## Part One

S3.10 [page 163 of thesis].

### *Comparing the 1995 and 1996 Studies*

*In the 1995 singularity study there were more classroom observations and quite a lot of high quality dialogue with colleagues and students. This dialogue was mostly about the teaching/learning communicative activities and other aspects of my teaching and some of it was about the students' learning. However, the 1996 singularity study had more specific comments from the students (both written and on audiotape) regarding their own learning in a specific content area of the chemistry course (electrolysis). [Singularity Study Three (page 55)]*

### *Rating Scale*

Table S3.3 and some of the following comments [Appendices (pp. 339-340)] help confirm the credibility of the -5, -3, -1, 0, +1, +3, +5 rating scale I devised for the third (and second and first) singularity study.

### *Feedback from Key Respondents*

*After sharing a paper on my 1996 study in Bath (July 8th, 1996), Jack Whitehead, Terry Hewitt and one other person who lectures in the University of Bath felt that I still needed to get closer to the learning of the students. I shared this feeling and also felt that my empathic utilisation of statistics was inadvertently leading me to place too much focus on my teaching and not enough on the students' learning. [Singularity Study Four (1997: page 3)]*

### *Standards of Judgement*

While I addressed the notions of logical, practical, ethical, and aesthetic standards of judgement (Whitehead, 1993) in my third singularity study, I hadn't, at that stage (June 1996), developed a set of sufficiently meaningful personal criteria for my work. These emerged more fully in later practices, which include the fourth singularity study (1997), the writing of the third edition of the 1994 study, the writing of the second editions of the 1995, 1996, and 1997 studies [between January and March 1998], and the subsequent writing of my thesis which was submitted in May 1999.

### **Modifications**

While I began to elicit teaching/learning communicative activities in the early part of the 1997 study, I chose not to pursue this direction, mainly because I wished to zero in on individual learnings, but also partly because I felt my methodology was in danger of becoming too formulaic and routinised. Pages 347-348 of the Appendices outline my abandonment of statistics in the 1997 study and my decision to get much closer to an individual student's learning in a particular area of mathematics.

## Part One

### Singularity Study Four [Oct 8 1996 - May 19 1997]

#### Context

In this fourth singularity study I worked with 13 sixth form higher level Leaving Certificate mathematics students, eventually concentrating on the learning of one of the most disadvantaged (in relation to results and aptitude) in the group - Hugh.

#### Action-Reflection Cycle

##### Problem and Developing a Focus

The following excerpt explains my overall central problem coming into the fourth singularity study:

*In July 1996 [after feedback on my 1996 study] I felt that I still needed to get closer to the learning of the students. I valued gaining a greater understanding of a student's understanding but I was failing to do so [living contradiction]. Although I valued using empathic statistics to get closer to students' learnings, it seemed that the 'bigger group' approach (the way I was using it) was 'blocking' me from a more committed accompaniment of an individual and his understanding. [Singularity Study Four (1997: p. 67)]*

Pages 347-348 of the Appendices outline my decision not to use statistics, my concomitant decision to focus on a smaller group of students, and my eventual decision to focus on Hugh's learning. Pages 164-169 of the thesis give more detail.

##### Implementation of Imagined Solutions and Gathering Further Evidence

The top half of page 236 and the top of page 239 of the thesis summarize some of the problems I discerned in Hugh's understanding of mathematics, the eventual central focus being Hugh's difficulty building up a function in terms of one variable in maxima/minima problems. Pages 233-239 of the thesis explain in more detail how I arrived at these judgements.

Following Selinger (1994), I obtained 'metaphors' or 'images' for learning mathematics from Hugh on December 17th, 1996 and May 7th, 1997 in order to tease out some attitudinal information. An audiotaped conversation with Hugh on January 13th, 1997 also yielded some relevant information on this matter. Pages 256-261 of the thesis provide an evaluation of the 'images' issue.

When zeroing in on the maxima/minima differential calculus problems, Ann Carroll, a very helpful critical friend and a mathematics teacher from a local convent secondary school, interviewed Hugh on two different occasions after he had covered recent material in class.



## **Part One**

I let Ann know the content of the mathematics lessons I was teaching Hugh before the interviews.

**The sixth form students and I covered the maxima and minima section of the further calculus option in a two week period between Monday, January 20th, 1997 and Friday, January 31st, 1997, inclusive. The following is a chronological list of Eleven Events whereby high quality ‘evidence’ was gathered in a reasonably short time:**

**Event One: Thursday, January 16th:** Ann Carroll introduced herself to the three students.

**Event Two: Tuesday, January 21st:** I had an audiotaped planning meeting with Ann Carroll.

**Event Three: Wednesday, January 22nd:** Videotape I of two mathematics lessons.

**Event Four: Thursday, January 23rd:** Ann Carroll had an audiotaped conversation with Hugh, Felim and Paul about the previous day’s work.

**Event Five: Thursday, January 23rd:** I had an audiotaped meeting with Ann Carroll.

**Event Six: Friday, January 24th:** I had an audiotaped conversation with Hugh.

**Event Seven: Tuesday, January 28th:** Ann Carroll and I had another planning meeting.

**Event Eight: Wednesday, January 29th:** Videotape II of two mathematics lessons.

**Event Nine: Thursday, January 30th:** Ann Carroll had an audiotaped conversation with Hugh.

**Event Ten: Thursday, January 30th:** I had an audiotaped conversation with Ann Carroll.

**Event Eleven: Thursday, February 6th:** I had an audiotaped conversation with Felim and Paul and a separate audiotaped conversation with Hugh.

### **Evaluating Our Actions - Further Analysis of Classroom Action Research Information**

A more refined and 1998 evaluation of the 1997 singularity study is proffered in Chapter Eleven (pp. 229-266). Nonetheless, the following reflect some of the central content of my July 1997 evaluation of the 1997 study where I got much closer to an individual student’s learning than in any of the 1994/1995/1996 singularity studies:

## Part One

### *Claims to Knowledge*

Four ‘first order’ claims to knowledge for the 1997 study are stated on page 263 of the thesis. Briefly, the four claims infer that there is evidential support that: (i) Hugh’s aptitude and knowledge of basics were stumbling blocks for his progress in mathematics, (ii) Hugh’s understanding of mathematics improved during the course of the enquiry, (iii) Hugh developed a more positive ‘image’ for learning mathematics between December 1996 and May 1997, and (iv) my more empathic understanding of Hugh’s understanding of mathematics helped Hugh to improve his learning and his confidence in mathematics.

### *Standards of Judgement*

In July 1997 I utilized (i) methodological, (ii) dialogic-ontological, and (iii) social standards of judgement identical to those on (i) pp. 47-51, (ii) pp. 52-53, and (iii) pp. 54-56 of the thesis. My ‘ethical’ standards of judgement were somewhat naive, different to, and not as developed as the more personally meaningful educational standards of judgement on pp. 52-53 of my thesis.

Standards of judgement are central to a living educational theory approach to action research (Whitehead, 1993: p. 54) and are a centrally important epistemological strand of argumentation in my thesis as reflected in my Abstract:

*In creating my own educational theory, I demonstrate how I have become a more reflective educational action researcher in developing and defining an original set of standards of judgement for judging my action research and teaching practices. These include my methodological, educational, and social standards of judgement.*

## Modifications

My next task was to try to more accurately discern appropriate patterns and themes in my singularity studies in order to set about constructing a unified thesis. I wrote the following to Hugh Lauder in **early December 1997**:

*One of the primary tasks before me as I set out to write a full thesis is to more accurately discern the pattern of themes within the four singularity studies. [Data Archive]*

Lomax’s (1994: p. 121) notion that the ‘*patterns and themes are the “green shoots” of theory that is grounded in the events you describe*’ has been a centrally important influence in my decision to adopt a thematic approach in more fully understanding my work and when writing my thesis.

**[Action-reflection cycles for Thesis Submissions One and Two are given in the Appendices (pp. 295-300) and complete the spiral of action-reflection cycles for my work.]**

## **Chapter Five: How Moving Towards More Democratic Actions in My Classroom Improved Opportunities for Learning**

### *How Do I Theorise?*

I have already indicated how my theory evolves primarily in an *a posteriori* fashion from my four practical studies of singularities [page vii and page 49]. In Part Two of my thesis it is my intention to connect more fully and more critically to literature relating to the theme of more democratic actions in the classroom. This is not to imply that it is a case of theory from the ground up meeting theory from the top down, rather, in releasing myself from the net of hierarchy cast by 'ground up' and 'top down', is it a case of appreciating the picturing function of the following metaphor as a means to understanding my response to the question 'How do I theorise?':

*An important metaphor has been with me since early January (1998). In it I am continually walking through four fields (the four singularity studies) in order to get to know the lie (the manner, place, or style in which something is situated) of the land and the assortment of plants, grasses, flowers, weeds and thistles growing in each of the fields. When I feel I have a good knowledge of (or a high degree of familiarity with) the four fields I will enter the fifth field (the development of theory in my thesis). At present it is sunny and the fields occupy both sides of a v-shaped valley. Four fields are on one side and it is possible to look over and see the fifth field. But, most importantly for this thesis, when I go over to the fifth field to become familiar with its inclinations and growth, I can look across to the other side and see the four fields at the same time or, if need be, focus on each of the four fields individually, thereby remembering the land through which and from which I have walked. I can also cross the valley again if I wish or am wished by the poetic power of the metaphor and view the fifth field from the four fields that I know reasonably well. Eventually the two sides of the valley will merge into one and become the ground (a new first field) from which and through which my future teaching and research practice will grow. (Singularity Study Three: pp. 17-18)*

It is also worth stressing that there is a strong pragmatic dimension to my understandings, judgements and decisions within action research in which:

## Part Two

*the pragmatist defines a concept by acquiring what practical effects it involves in the way of experience and action, and s/he regards these effects as constituting the concepts themselves* (Curtis and Boltwood, 1965: p. 471).

As a pragmatist and an action researcher, I open the door into the first emergent and evolving theme from my singularity studies.

### *More Democratic Actions in My Classroom*

As already stated in my singularity studies our school is a boys' Catholic diocesan secondary school, named St. John's College (740 students), which has a priest as principal who lives in the College building with two other priests who are also on the staff of 45 teachers (14 women, 31 men).

In this chapter I will focus on the first three of my four singularity studies --- 1994 (Chemistry of Physics/Chemistry), 1995 (Mathematics), and 1996 (Chemistry). When addressing the theme of democracy I believe it is important to keep in mind that all of the students in the singularity studies for this thesis were sixth form (17-18 year-old) students in their final year at secondary school in the Republic of Ireland where each student takes seven or eight subjects in their Leaving Certificate Examinations. The large number of students, especially in the Junior classes, the quantity of material to be covered in each subject, some voluntary supervisions by teachers both in the study hall and at the eleven o'clock break are some of the persistent internal and external features intensifying the teaching day and constraining the amount and quality of individual time-and-energy attention that can be given to each student inside the classroom.

There has been a National Curriculum for the final year tests since 1924 when the Leaving Certificate Examinations were first introduced, two years after the foundation of the 'Free State' which was later declared a Republic in 1949. The National Curriculum is under constant review. For example, Civic, Social, and Political Education was introduced as a

## Part Two

new subject in 1996. It moves from a Local to a National to a European to a Global context in its sense of citizenship and community. At present I am not involved in teaching this subject.

In focusing on more democratic actions in the educative relationships between my sixth form students and me inside the classroom during 1994, 1995 and 1996 I will utilize the notions of *student voices* and *teaching/learning communicative activities* to help me further open the door and enter the world of my first theme. In contrast to the present emphasis on student voices, it may be worth reminding the reader that in Chapter Two the focus was more overtly on an educational arena for the expression of my own voice, a particular teacher's voice.

### 1. Student Voices and Teaching/Learning Communicative Activities

Regarding student voices in Singularity Study One (1994: p. 7) I wrote:

*One of the central strands of development in my enquiry is changing my routine teaching practice in the classroom in order to satisfy the students' stated needs a little more; I will therefore focus mainly on the students' responses to Q.16 in 'Imagined Solutions', giving all of their responses in their own words (thereby letting the students speak for themselves).*

Q.16 was, '*What changes would you find helpful in the way in which chemistry is taught?*'.

The full originating questionnaire of the 1994 study, the students' responses to Q. 16, and my processing of these responses are given in the Appendices (pp. 302-308). After carefully reflecting on and analysing the students' responses [pp. 304-307 of Appendices - Singularity Study One: pp. 8-12], I chose the following as my main helping strategies - my main 'imagined solutions' - for this group of twenty-one sixth form chemistry students:

## Part Two

In each chemistry class I would try to:

- (1) Check each individual's Homework (see that an attempt was made) ----- CH
- (2) use the Students' Solutions to the homework ----- SS
- (3) Invite Questions from the students ----- IQ
- (4) give Written Homework for the next day ----- WH
- (5) Use the Book more ----- UB
- (6) Go more Slowly ----- GS
- (7) Explain more Clearly ----- EC
- (8) Check students' Understanding ----- CU

I wanted more living out of these eight '*teaching/learning communicative activities*' (which I called *teaching behaviours* and *teaching areas* in June 1994) to become part of my standard teaching practice with this class and considered this *teaching/learning web of imagined solutions* to be very important at the time (and still feel the same way now - March 1998). After the 1994 singularity study I more deeply appreciated that the eight activities constituted particular 'living contradiction' elements of my practice (Whitehead, 1985: p. 56).

The quality of the dialogue between the sixth form students and me in creating the teaching/learning communicative activities in the 1995 and 1996 singularity studies was, in my view, vastly superior to the quality of the dialogue in establishing the teaching/learning communicative activities in the 1994 study of a singularity:

- In 1994 (21 sixth form chemistry students) I elicited the initial grounded information from the students by the sole means of questionnaires.
- In 1995 (23 sixth form mathematics students) we used a questionnaire and had a class discussion (using groupwork in processing feedback) during a forty minute period.

[See '*methods for a single event*', page 50 of thesis]

## Part Two

- In 1996 (11 sixth form chemistry students) I gave the students a questionnaire and the following week we had a discussion for seventy-five minutes and the day after the discussion I member-checked (Lincoln and Guba, 1985: p. 314) with all of the students regarding my understanding of what we had decided by consensus/majority - see Appendices (page 336) [meaning that I value '*collaborative intent*' (Lomax, 1994: p. 120) as a criterion in my methodology].

I believe that the initial phase of an action research enquiry is vitally important in terms of contributing to an epistemology that is truly grounded in educational practice and in 1994/1995/1996 I have grown in my appreciation of the need to have as accurate an understanding as possible of what the students are saying to me regarding ways in which *they* feel I can help them to improve their learning. [In 1997 I worked with one student.]

It is important to state that *one way is which I desire my work to be judged is from the perspective of my students; that is, on the extent to which they believed I more fully lived out what they suggested (and it is worth noting that these students were sixth form students with a reasonable degree of maturity and at least one year's experience of my teaching)*. This desire is not in any way meant to obscure the fact that I am also accountable to a critical educational community, to the reader, and to myself.

The main reasons why I changed my nomenclature from *teaching behaviours* to *teaching/learning communicative activities* between the 1994 and the 1995 singularity studies were:

- In August 1994, Ben Cunningham, acting as a key respondent, mentioned that a reader could possibly misinterpret the word 'behaviours' as implying behaviourism. I was not happy with that possible negative implication as I felt it could potentially reduce my intended meanings to a mere mechanistic stimulus-response approach to the human being who was a student in this case. Philosophically, having studied guidance and counselling in 1986-1988, my favoured approach to helping (and teaching as helping

## Part Two

to learn is a form of helping human beings) is an eclectic person-centred stance rather than a behaviourist approach because I believe the former has a more wholesome and holistic approach to the human being.

- Since the mid-eighties I have been acquainted with Lonergan's notion of communication as the 'sharing of a lived meaning' as well as 'the transmittal of a message' (Savary, 1974: p. 48) and I thought that the word 'communicative' would be a most appropriate adjective and together with 'activities' would keep the focus on the intersubjective and on the teaching/learning interphase between the students and me. Therefore I chose *teaching/learning communicative activities*.
- Since January 30th, 1998, I have come to more fully appreciate that teaching/learning communicative activities, for me, carry the connotations of consciousness raising and praxis along with notions of technique and method. I articulated this viewpoint during a lunch-time meeting with an academic, AK, University of Bath, when it was inferred at one point in the conversation that my work was merely about technique. I am taking one meaning of praxis to be 'practical, morally committed action' (McNiff, Lomax, and Whitehead, 1996: p. 129) where I make a moral commitment to enact a teaching/learning communicative activity which has been elicited through dialogue between my sixth form students and myself; for example, Explaining more Clearly with regard to Stating my Train Of Thought (ECSTOT) was one teaching/learning communicative activity which arose in my second singularity study (Singularity Study Two: pp. 10-11).

Through listening to 'student voices' in dialogues between my sixth form students (17-18 year-old students) and myself, I elicited (with student input) teaching/learning communicative activities in the 1994/1995/1996 singularity studies which the students felt would help them to improve their learning. I have already stated my belief that there was higher quality dialogue and more listening on my part in the 1995 and 1996 studies than in



## Part Two

the 1994 study when I began to develop a methodology for helping my students to improve their learning.

**It is my belief that through listening to my students' voices which informed the collaboratively elicited and created teaching/learning communicative activities and through the subsequent successful implementation/enactment of those communicative activities over an eight to ten week period we were engaging in more democratic actions in the classroom.**

The successful implementations/enactments of the communicative activities were judged by my sixth form students through feedback sheets at the end of class (1994 and 1996), through written feedback by repeating students (1994), through written responses to videotaped lessons (1995), through statistical feedback (1994-1996), and through audiotaped conversations (1995 and 1996), and also judged by critical friends (1994 and 1995) and key respondents who proffered critical feedback for my 1994/1995/1996 reports.

As I believe 'student voices' informed and helped form 'teaching/learning communicative activities', I will now focus on 'teaching/learning communicative activities' in order to tease out more fully the democratic dimension of my work and also to connect to further literature; I will return to 'student voices' later.

### **2. Teaching/Learning Communicative Activities**

In my view, the teaching/learning communicative activities are dialogic activities, dialogic in source and dialogic in action - their meanings are essentially intersubjective. I am struck by the remarkable resonance between the notion of communication as the sharing of a lived meaning and the emphasis on communication and shared experience within Dewey's notion of democracy (Rockefeller, 1991: p. 240):

## Part Two

*A democracy is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experiences. (Dewey, 1916: p. 87)*

Rockefeller (1991) notes:

*Dewey's point is not that all associated life automatically provides one with a sense of communion, as some critics seem to suppose, but simply that insofar as a person adopts democratic attitudes and genuinely opens his or her mind and heart to the experience and needs of diverse individuals and groups the sense of belonging, of community, which sustains life is deepened (Rockefeller, 1991: p. 246).*

All of my sixth form students had experienced my teaching for at least a year (and some for two or three years as Junior students) and, therefore, when they were suggesting ways in which they felt I could improve my teaching they seemed to be drawing on their experiences of my teaching and also stating some of their learning needs. In the three singularity studies under consideration I believe that I opened up my mind more fully to some of the experiences and needs of my sixth form chemistry and mathematics students. In this opening I maintain that I was adopting a more democratic attitude within the educative relationships between the final year students and me.

Further, to my mind, the intersubjective meanings within *teaching/learning communicative activities* involve notions of 'associated living' and 'shared experiences' [for example, Checking Students' Understandings (CSU) - Singularity Study Three: page 5] and as such are potentially profoundly democratic, despite the limitation that my particular ways of helping my students to improve their learning may have placed too much emphasis on what I was doing and not enough attention on the students' learning (Singularity Study Two: page 91) - an unintended consequence of action (Giddens, 1979: p. 56). Gladly, in my third singularity study I attempted to rectify that limitation somewhat and in my fourth singularity study I concentrated solely on an individual sixth form student's learning in mathematics.

## Part Two

For Dewey the ‘individual’ and ‘society’ are neither fixed entities nor separate domains (Carr, 1995: p. 85); that is, each has the possibility of ‘growth’ and there is also an organic connection between the two (Rockefeller, 1991: p. 237). This is also my own view regarding people in general, although, rather than think of my students and myself in the classroom as a ‘society’ or as a ‘model of society’ I would tend to think of my sixth form students and myself as a group of human beings, enacting ‘roles’ of students and teacher, with the potential for creating a greater sense of community inside and outside the classroom. Nonetheless, I fully acknowledge that there are unequal power relations between my sixth form students and me.

It is my belief, however, that in collaboratively eliciting/creating and in systematically enacting more fully teaching/learning communicative activities during three of the singularity studies I shared some of my power with the sixth form students and helped make our relationship a little less unequal. In learning ‘*to (more fully) abdicate my position of centrality*’<sup>1</sup> (Kearney, 1984: p. 63) I believe I helped to empower the sixth form students in involving them in making considered judgements about how they felt they should be taught and also in evaluating<sup>2</sup> my teaching practices.

### *Student Voices*

Regarding ‘student voices’ and ‘teaching/learning communicative activities’, I am primarily concerned with the **individual autonomy** of the students and the **social relationships** between the students and me. This is not to deny the importance of the social relationships among the students nor my own individual autonomy. **The three excerpts below from Singularity Study Two** help capture I believe the seriousness of my intent to learn to further abdicate my position of centrality, to share some of my power

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<sup>1</sup> These words were used by Lévinas in conversation with Kearney in Paris in 1981.

<sup>2</sup> For example, pages 100, pp. 109-110, and page 114 give the sixth form student statistical evaluations of the 1994, 1995, and 1996 teaching/learning communicative activities.

## Part Two

with sixth form students, to encourage the expression of student voices and to act more purposefully on a democratic impulse.

Before looking at the excerpts, it is worth reminding the reader that I had already been in dialogue through interactive journalling and conversations over a number of weeks during late 1994/early 1995 with Ronan M, a gifted sixth form higher level mathematics student (who is now - May 2000 - in his fifth year of medical studies in Dublin), and that an area of enquiry had arisen in an 'emergent design' fashion. Both of us felt that the sixth form students in mathematics asked very few questions and so on January 12th, 1995, I gave the students a questionnaire (Singularity Study Two: page 8) in which the third question was, '*What are your reasons for not asking more questions in the mathematics class?*' [see Appendices (pp. 326-329) for more details]. The students worked in groups on the questionnaire. The groupwork was processed with feedback from each group and then we had an open discussion. The whole session lasted 40 minutes (mentioned on page 78).

### Excerpt One — Singularity Study Two (pp. 11-12)

*On the day after the students responded to the questionnaire, Ronan and I met for a taped conversation at four o' clock to review how the exercise went. [I believe feedback within 24 hours is an important principle of classroom observation (Hopkins, 1993: p. 80).] The following is an excerpt:*

**Ronan** *I thought it would be treated as a bit of a joke by most but there were only a few who thought it was funny and when they got down into the groupwork they contributed as much as others who took it seriously.*

**James** *Well -- now I felt even from reading all the individual sheets that there was nobody trying to be smart on the sheets ---- I was very impressed by that now ---- first of all how open they were to it and also the depth of some of the reflections ---- you know.*

**Ronan** *Yeah --- they came up with some good suggestions --- I thought they might be afraid to speak out --- you know because the teacher was there as they were doing the groupwork --- but they all came out with their own suggestions and their own opinions on it.*

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*Overall, the two of us felt the session with the class went well. This was further confirmed by comments from some of the students from the class who watched two videos of my teaching in early February and late March (1995).*

*Around this time I was beginning to feel the asymmetrical nature of the power relationship between Ronan (a student) and me (a teacher) and desired to bring in a few other students to create more 'balance' and greater co-discernment. The following Tuesday I acted on this desire (with the intention of living out more democratic and more socially just actions) and asked four other students along with Ronan if they were willing to watch a videotape of one of our mathematics sessions. They readily agreed.*

The following excerpt gives a fuller articulation of my reasons for asking other students to join Ronan in our dialogues.

### Excerpt Two — Singularity Study Two (page 21)

*Being attracted to the radical call to care for the other (in my work context the most important other for me is the student) in the 'essential asymmetry' of Emmanuel Lévinas where 'I become a responsible or ethical 'I' to the extent that I agree to depose or dethrone myself - to abdicate my position of centrality - in favour of the vulnerable other' (Kearney, 1984: p. 63) and fearing a potential asymmetrical-trust (sage/petitioner)<sup>1</sup> colouring in the nature of the one-to-one dialogic relationship between Ronan and myself, I desired to bring in other students to create a more just (fairer to Ronan) and more democratic (more student voices) balance of interests.*

*The five students were:*

- *Donan H (invited because he didn't appear to be afraid to speak out in class discussion)*
- *Kenneth K (asked because he is a repeating student)*
- *Kieran McG (who challenged me on stating my train of thought more clearly)*
- *Ronan M (a research relationship was already established)*
- *Barry O'D (who challenged me on my timing of talking when writing on the blackboard)*

*Further, I felt they had a range of performance levels regarding examination results. This was confirmed in the trial leaving certificate examination later, three of the students failing, one student obtaining a very good pass, and the other student (Ronan) getting an honour.*

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<sup>1</sup> Massarik (1981), as reported in Lincoln and Guba (1985: p. 269).

## Part Two

The next excerpt contains a February 9th (1995) written comment from Kieran McG as he reflected on the January 12th (1995) meeting with the whole class.

### Excerpt Three --- Singularity Study Two (page 26)

**Kieran McG** *I think the whole teacher-class relationship was altered that day. When you asked students for opinions you were treating us like we were all the same level - maturity. I think this gained you more respect and maybe students are more open in asking questions to a teacher who treats them as senior students. Maybe you should try this or similar experiments on (!) other classes in future to build on your class-teacher relationship. All relationships have input from both sides, the more balanced the better. Obviously, it cannot be completely balanced as far as input goes, but if the balance is tipped too far in one direction it will not work as well.*

To my mind this statement from Kieran (Singularity Study Two) points to a fundamental positive democratic power shift in the direction of the sixth form students in my mathematics class of 1994/1995.

In my view, letting 'student voices' through, listening to them and acting on them appropriately are part of the process of enacting a fundamental positive power shift in the students' favour. **The following segments, one from Singularity Study One (1994) and two from Singularity Study Three (1996)** are also evidential of the value I place on 'student voices' in this enquiry.

### Singularity Study One (page 43)

*In November 1994 (six months after the 'completion' of the 1994 enquiry) Paul M and Philip N, two students from the 1994 chemistry group who repeated the leaving certificate in 1995, partook in an audiotaped conversation with me:*

**James F** *First of all I gave you a questionnaire ----- and then from reading the questionnaires I thought that some changes were needed in some areas like 'going more slowly'. Maybe not so much for you Paul (Paul had related 'at the time you were going fine') but for some of the others, did you feel that I used the students' ideas?*

## Part Two

*Paul M* I felt that you did, like giving and checking homework (WH and CH) and inviting questions (IQ).

*James F* So you think that I was using their ideas but the question is, 'Did the fact that the students felt I was using their ideas help them?'

*Paul M* Yes because it makes them feel that they are being listened to because in other classes no other teachers would do this and they just battered on as they were and when you came in here you are actually being listened to for once. So it would help.

*In Paul's view, the students had a sense of being listened to and felt that I was acting on their ideas. I believe the above segment of conversation helps bolster my claim that I was living out empathy and democracy a little more with these students with possible associated positive influences on their learning.*

**The very significant question of how more democratic actions in the classroom might link to enhanced student learning will be addressed later. (page 96)**

### Singularity Study Three (page 21)

*'What was your impression of the meeting?'* (This 75-minute meeting at the start of the 1996 study is mentioned on the top of page 79)

[The following responses to the above question were obtained in late November 1996 - early December 1996. There were eleven sixth form students in the chemistry class and all of their responses are included, which are very favourable apart from David M's and Aidan R's concerns about the time invested in the meeting. Jarlath's invitation to give more independence to the student challenges me to lessen still further the potential 'learned helplessness' aspect of my teaching where I do too much for my students.]

*I think the meeting went very well. It was the first time that students were given the chance to give their opinions on how they thought they should be taught<sup>1</sup>. I think that these new measures will help us the students to understand chemistry better and therefore at the end of the day get a good grade in the leaving certificate. (Eamonn F).*

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<sup>1</sup> In this excerpt I utilize **bold type** in some of the students' responses to draw attention to the improving democratic nature of our educative relationships.

## Part Two

*It was a very productive and honest meeting in which for once we (the students) finally get our say in the type of work rate and atmosphere in the classroom. (Ethan G).*

*I felt it was good especially being an informal and relaxed meeting. I feel everyone got a chance to express their opinions. Overall success. (Afnan HZ).*

*Very productive and interesting. I feel a lot was learnt from this exercise and that perhaps an improvement will be made. (James K).*

*I believe that the meeting was productive but I am concerned about the time factor (1 hr 15 min). (David M).*

*I feel it was very beneficial to the pupil teacher relationship and the freedom to suggest possible changes in the teaching method was immensely beneficial to us and to you. (David O).*

*I thought that the meeting was very beneficial for both the teacher and students. We got a lot of topics sorted and a lot of suggestions were made. (Gary P).*

*Worthwhile - however, a bit too long - wasting some time just discussing the various problems. (Aidan R).*

*I believe it was beneficial as it clarified important activities and solved any problems we had. (Kevin R).*

*I feel that the meeting greatly helped the teacher-student relationship because the meeting allowed us to air our problems in a relaxed and open atmosphere. I feel that we covered all points of concern and I feel our learning will benefit greatly from the above [the nine teaching/learning communicative activities (see page 114)]. (Paul R).*

*I thought the meeting was extremely successful and in some ways it narrowed the gap of communication between teacher and student. It highlighted the thoughts and ideas of the students and these ideas were then discussed. Something that did not feature in the meeting was the idea of students working for themselves. In saying this I mean that since we are now sixth years we know what we have to do and how to work for ourselves. Since there is some pressure on the teacher to complete the course in time, maybe we could do something in order to help out the teacher and take some of the pressure off (Jarlath T).*



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### Singularity Study Three (page 37)

*Eamonn F (written response to Q.4<sup>1</sup>, Jan 18th): We can now learn much faster because our opinions are being considered.*

*Afnan HZ (written response to Q.4, Jan 18th): More democracy - listen more to students' questions.*

*David M (written response to Q.4, Jan 18th): Diplomacy towards students - we have an equal say.*

*Additionally, in an audiotaped conversation with David O, on January 29th:*

*James F Could you give me an example of where you saw democracy (David O had mentioned 'democracy and justice' in a questionnaire) lived out?*

*David O For example, the meeting we had (Tuesday, November 28th). Everything was done very democratically. You took a vote on what options we were to proceed with and again today in class with regard to the practicals you asked if tomorrow would suit or if Thursday would suit. So, you let the students decide.*

**In the above six excerpts [pp. 84-89] I have been attempting to relate some of the seriousness of my intent to learn to further 'abdicate my position of centrality' in letting the 'student voices' through, listening to them, and acting on them appropriately as part of the process of enacting a fundamental positive power shift in the sixth form students' favour, thereby claiming that I have been engaging in, and we (my sixth form students and I) have shared in, more democratic actions in the classroom during the 1994/1995/1996 singularity studies.**

Admittedly, there were no audiotaped conversations between the sixth form students and me *during* the first singularity study. And there was much more audiotaped dialogue in the second singularity study than in the third singularity study. Also, I believe the quality of dialogue between students and me and between critical friends and me during the second

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<sup>1</sup> Q.4 was, 'What values (beliefs informing my attitude to teaching/learning and to you as a student/person and you as a group) do you experience being lived out more fully by me with you in the student/teacher learning/teaching relationship since we started the project on Tuesday 28-11-1995?' [Q.3 asked about my failure to live out values prized by the 1995/1996 sixth form chemistry students.]

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singularity study was superior to the quality of dialogue in the third singularity study. But, it is important to remind the reader that in the third singularity study there was a greater focus on the learning of students in a specific content area (in chemistry) than in the first two singularity studies where there was a focus on the students' learning but not on a specific content area of chemistry or mathematics. In the fourth study of singularity I returned to high quality dialogue and eventually focused on one sixth form student's learning in a specific content area of mathematics.

Indeed, one could argue that I was '*bifurcating content and teaching processes*' in the first two singularity studies and that I was, at most, engaging in '*an act of scholarly convenience and simplification in the research*' (Shulman, 1987a: p. 6). However, in the earlier singularity studies **I felt it was important that teaching/learning communicative activities had the potential for transferability (Lincoln and Guba, 1985: p. 297) to other subject areas apart from chemistry and mathematics and that teachers or lecturers who read my work might engage with their own students in collaboratively eliciting/creating, more fully enacting, and evaluating teaching/learning communicative activities which the students felt could be lived out more fully in a particular subject with a view to helping the students to improve their understandings.** I first read Shulman's paper (Shulman, 1987a) in late 1997 and I am heartened to see that '*checking for student understanding during interactive teaching*' is foundational in the evaluation phase of Shulman's '*Model of Pedagogical Reasoning and Action*' (Shulman, 1987a: p. 15) and that this arose naturally as a teaching/learning communicative activity in my 1994 study of a singularity and in a more informed fashion<sup>1</sup> in the 1996 singularity study [Checking Students' Understandings (CSU)]. Another interesting feature about 'checking for student understanding' is that it is also a way of giving expression to 'student voices' regarding their own learning in the classroom.

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<sup>1</sup> For example, Doyle (1987), as reported in Hopkins (1993: p. 180), notes: '*students usually achieve more when a teacher frequently asks direct and specific questions to monitor students' progress and check their understanding*'.

## Part Two

### *Human Freedom and Social Relationships*

Before further addressing the issue of students' learning, I wish to include a relevant exchange of email correspondences between Jack Whitehead and myself because they refer to the relationship between **human freedom** and **social relationships** (page 83) which I believe are crucial central issues in one's approach to democracy. I choose the switch from Ronan and me to five students and me (first paragraph, Excerpt Two, page 85) as a concrete 'moment' of significance and as a particular practical expression of my philosophical stance articulated in my email correspondence to Jack Whitehead below.

In the first email I include an excerpt from Jack Whitehead's response to my August 1996 report, 'An Autobiographical Account of Some of My Learnings'.

#### **Email from Jack Whitehead (September 6th, 1996)**

*Dear James, ----- I find myself drawn to a focus on page 7, where you say that you are attracted to the words of Emmanuel Levinas, spoken in conversation with Richard Kearney. My point of focus is:*

*'As soon as I acknowledge that is 'I' who am responsible, I accept that my freedom is anteceded by an obligation to the other.... Even if I deny my primordial responsibility to the other by affirming my own freedom as primary, I can never escape the fact that the other has demanded a response from me before I affirm my freedom not to respond to his (or her) demand.'*

*I really feel that you are helping me (a reader) to understand your meaning of committed service in/to education.*

*I also felt privileged to be invited to share and respond to this autobiography of some of your learnings. I'm curious about my own attention to my response to you. ----- What I'm curious about is that I feel invited to give a response from within your own commitment to relationship where freedom is anteceded by an obligation to the other.*

*Since my early twenties I've been conscious of acknowledging the freedom at the core of my being which up to now has been passionately life affirming whilst being certain of my own death and being certain that I could choose death at any time. This freedom has anteceded my obligation to the other. --- Warm regards, Jack.*

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### Email from James Finnegan (September 7th, 1996)

Jack,

*When I first quoted Levinas I felt that your view would be different to Levinas's with regard to freedom and obligation to another.*

*Your understanding that in my commitment to relationship that my freedom is anteceded by an obligation to the other (I am still wondering if this is true) and your expressed view that the 'passionately life affirming' freedom you described has anteceded your obligation to the other helped to create a dialectical tension in my mind over the last couple of days even though I was out with others cycling, etc.*

*This I feel is my present thinking on the matter:*

*Firstly I believe I freely choose my commitments (e.g. teaching, action research, hill walking): these commitments bring involvement in other people's lives and the nature of these involvements creates a new context within which I exercise my freedom. The freedom context in teaching, for me, involves commitment to helping others to learn and the 'obligation to the other' emanates from within, discerned in my mood. I know I am paid to help but I also want to help. For me, at present, the word 'antecede' creates a 'philosophical cramp' and so I'll let it be for now. — Warm regards, James.*

To me, there is resonance between the potential for building community within the last paragraph of two years ago (the above email) and the organic stance within the following (which I first read in March 1998) which is part of Carr's (1995) argument that the philosophy of Dewey has relevance for reconstructing the relationship between education and democracy today:

*Thus, for Dewey, the 'individual' and 'society' are neither fixed entities nor separate domains [but they are distinctive - own comment]. They are both elements within a single process of 'growth' - an endless spiral whereby individuals use their intelligence to reshape the society by which they themselves have been shaped, in order to make it more conducive to the development of their individual freedom. (Carr, 1995: p. 85)*

In the nineteenth century, a very different version of the relationship between the 'individual' and 'society' was prevalent: the 'individual' of a liberal democracy was understood as

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*'someone who existed apart from society and 'society' was understood as nothing more than the aggregation of isolated individuals pursuing their private ends' (Carr, 1995: p. 83).*

It appears that this was largely as a result of impassioned and intensely human efforts to gain

*'emancipation of life from external restrictions which operated to the exclusive advantage of the class to whom a past feudal system consigned power' (Dewey, 1916: p. 92).*

A downside, for me, of such an atomistic view of the private individual is that it is quite anti-human in perspective in that it denies the social nature of an individual. For example, language, which is so close to thought, is always learned through social contact with others; loneliness itself is born out of a need to be with others and is something existential as well as psychological in my view as is joy in being with others<sup>1</sup>; and if I speak it is usually to another.

It seems to me that a much more alienated and alienating kind of atomistic view of the individual to that of the downside of the nineteenth century version can gain footing today within a neo-liberal approach to the economy where *'market choice replaces democratic participation as the touchstone of human freedom'* [Lauder (1991) in Halsey, Lauder, Brown & Stuart Wells, 1996: p. 385] and in which a neo-liberal ontology denies the notion of society.<sup>2</sup>

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<sup>1</sup> Macquarrie, J. (1988) *Twentieth-Century Religious Thought*. pp. 389-390. London: SCM Press; Philadelphia: Trinity Press International: *'Ricoeur holds that joy (rather than anxiety) has a better claim to be considered the "ontological affect", that is to say, the mood or state of mind that affords the clue to the human condition, and that directs us to an affirmative relation to being rather than to alienation.'*

<sup>2</sup> Lauder (1991) Education, Democracy, and the Economy. *British Journal of Sociology of Education*, Vol. 12, pp. 417-431. Reprinted in Halsey, Lauder, Brown & Stuart Wells (1996). p. 391. Oxford. Own Comment: I can well remember hearing Margaret Thatcher say that 'There is no such thing as society' which was uttered around the time when Britain had about 3, 000, 000 people unemployed and the Republic of Ireland had about 300, 000 people unemployed. I now more fully understand her theoretical perspective and can also more fully appreciate how one can *'be led by abstract logic to push valid ideas to irrational extremes'* [Daly, C. B. (1993) *Law & Morals*, p. 47. Four Courts Press.].

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However, in Dewey's conception of liberal democracy which takes account of the social nature of an individual, individual freedom was not a starting point but an end-point that could be achieved only in and through a certain form of social life (Carr, 1995: p. 84).

This is consistent with my own view of the connection between human freedom and social relationships expressed in my notion of my commitment to students where *'the nature of these involvements creates a new context within which I exercise my freedom'* (page 92).

It is also consistent with my view of the sixth form students and myself in the classroom as a group of persons with the potential to form a more democratic community. Finally, it is consistent with the democratic impulse that urged me further into social relationships with the sixth form students in switching from Ronan and me to five students and me (first paragraph, Excerpt Two, page 85) in order to create more of a power balance between the students and me. In this 'switching', I find it difficult to appreciate how Hayek, in his 'theory of individual liberty', can separate individual freedom and choice from power and thereby reject a rich notion of participatory democracy as espoused by Dewey [Lauder (1991) in Halsey et al, 1996: p. 383 and p. 385].

### *A Structural Support for Me in an Irish Context*

It is my belief that a market philosophy hasn't dominated the Republic of Ireland Department of Education and Science's approach to education<sup>1</sup>. The first paragraph under **'Education and the State'** in the recent White Paper on Education, *Charting our Education Future* (Government of Ireland, 1995) states

*The State's role in education arises as part of its overall concern to achieve economic prosperity, social well-being and a good quality of life within a democratically structured society. This concern affirms fundamental human values and confers on the State a*

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<sup>1</sup> For example, before the DOE White Paper on Education, *Charting our Education Future* (Government of Ireland, 1995) came out in 1995 there were wide consultations on one of the prior Green Papers which contained some negative market elements (e.g. an overemphasis on 'business' language) which were later withdrawn after consultations. The teachers have strong unions in the Republic of Ireland and can create a 46,000 member united front when needed and I believe this factor along with criticisms from the various church groups [e.g. the Conference of Major Religious Superiors (CMRS)] together with politicians' good will and their concern for future votes were some of the factors in modifying the market elements in one of the original Green Papers.

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*responsibility to protect the rights of individuals and to safeguard the common good. Education is a right for each individual and a means to enhancing well-being and quality of life for the whole of society. (p. 4)*

An excerpt from the section under ‘**School Ethos**’ reads

*While each school may properly nurture its particular ethos, it is also obliged to acknowledge and reflect the principles and requirements of a democratic society, respecting the diverse beliefs and ways of life of others. (p. 9)*

And, finally, a segment from a section under ‘**Societal and Individual Development through Education**’ relates

*Education empowers individuals to participate fully and creatively in their communities. Time spent in education is not just a preparation for life, but is also a lengthy and important period of life itself. For this reason, the importance of collective, as well as individual, development is a key educational aim. — The education system should help to build up and empower communities economically, socially and culturally. (p. 10)*

The above excerpts from the 1995 DOE<sup>1</sup> White Paper on Education, in my view, show that in the Republic of Ireland there is a strong social dimension to the DES’s approach to education and to the people involved in education. The third excerpt places an emphasis on communities within societal and individual development thereby, in my view, inferring an organic connection between the individual and society. Without growing complacent towards government strategies, this is a structural support for me in my efforts to build a democratic sense of community in the classroom.

## Conclusion

I will close this section (which started on page 81) with the following statement concerning teaching/learning communicative activities:

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<sup>1</sup> The DOE [Department Of Education] changed its name to DES [Department of Education and Science] after the publication of the 1995 White Paper on Education.

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**It is my belief that through collaboratively eliciting/creating, enacting more fully and evaluating teaching/learning communicative activities with the sixth form students I have learned to further ‘abdicate my position of centrality’ in letting ‘student voices’ through, listening to them, and acting on them appropriately as part of the process of enacting a fundamental positive power shift in the sixth form students’ favour. I have also learned to value more fully the organic nature of, and the organic connection between, the human freedom of an individual and the social relationships within the ‘society’ of the classroom. I therefore claim that I have deepened my understanding of, and have been engaging in, and we - the students and me - have shared in, more democratic actions in the classroom during the 1994, 1995, and 1996 singularity studies.**

I would now like to connect to an intention stated earlier [page 87] and address the very significant question of how more democratic actions in the classroom might link to enhanced student learning.

### **3. How Do More Democratic Actions in the Classroom Link to Enhanced Student Learning?**

In this section I will focus chronologically on my first three singularity studies (1994, 1995, 1996). Regarding the relationship between teaching/learning communicative activities and democracy it seems to me that when the students and I were collaboratively eliciting/creating the communicative activities towards the beginning of the three singularity studies [and there was more dialogue at the beginning of the 1995 and 1996 studies than at the beginning of the 1994 study and more member checking at the start of the 1996 study than at the start of the 1995 study (pp. 78-79)], we were engaging in a form of direct democracy. When the teaching/learning communicative activities were being enacted we were effectively engaged in representative democracy (where I, as a teacher, through my own consciousness raising and praxis was representing some of the



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interests of the students). Finally, when the students gave comments [1994, 1995 (especially) and 1996] and ratings (1994, 1995, and 1996) in evaluating the teaching/learning communicative activities we were once again engaging in direct democracy.

One could possibly argue that the way in which the communicative activities were created in the 1994 study involved a degree of ‘vote rigging’ on my behalf ( or ‘voice rigging’ in the way I presented the study) - or ‘directed democracy’! - because of the lack of consultation immediately after the initial questionnaire at the beginning of my first singularity study. Nonetheless, there is sufficient truth in my singularity studies in my view to warrant the establishment of a positive connection between living out teaching/learning communicative activities (which were ‘living contradiction’ elements of my teaching practice) more fully over a ten week period and enacting more democratic actions in the classroom. It is worth reiterating that in living out the communicative activities more fully over time I was overcoming the denial of important educational values (values related to student learning and embodied in the communicative activities) for both the sixth form students and myself - negating a negation in the Whitehead (1993: p. 56) sense of the term, a key dynamic element in my methodology [page 48].

Because of my belief in the connection between (i) eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities and (ii) living out more democratic actions in the classroom, when I ask, *‘How do more democratic actions in the classroom link to enhanced student learning?’*, I am effectively asking, *‘How do eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities in the classroom link to enhanced student learning?’*. Additionally, as part of my argument for claiming the democratic thrust of my research enterprise I again appeal to the positive resonance between teaching/learning communicative activities and the dynamics of ‘associated living’ and ‘conjoint communicated experiences’ within Dewey’s

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*'A democracy is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experiences'* [(Dewey, 1916: p. 87) and pp. 81-82 of this chapter].

So my new question is:

### 4. How Do Eliciting/Creating, Enacting More Fully, and Evaluating Teaching/Learning Communicative Activities in the Classroom Link to Enhanced Student Learning?

#### Singularity Study One [Mar 8th 1994 - May 17th 1994]

While my earlier dialogue (page 90) with some of Shulman's work may suggest one way in which two different approaches to theory generation can meet [in relation to *Checking Students' Understandings (CSU)*], I accept the point that in focusing too much on the 'teaching processes' in the first study of a singularity, I inadvertently failed to connect adequately to specific learnings of specific students in specific content areas of chemistry as the following dialogue with self confirms (Singularity Study One: pp. 40-41):

#### *Chemical Content of the Students' Learning*

*Excuse me James, a question for you as you write.*

*Please don't interrupt me; I'm writing a thesis.*

*'Have you got one credible piece of research evidence that one of your students improved his understanding in a particular area of chemistry?'*

*No (gulp!)*

*Is that a cause for alarm?*

*Not really.*

*Why not?*

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*Because when I was engaged in this research I felt that my primary purpose was to respond to the students' responses to the question 'What Changes Would You Find Helpful In The Way In Which Chemistry Is Taught?' and to show that I have responded successfully to my students' suggested ways of improving my teaching practice, the eight transcendental communicative activities listed (below) [see next page], and to try and gather some evidence that the majority of the students' learning improved.*

*Transcendental? (Are you getting metaphysical!?)*

*Transcendental in the sense that the teaching, communicative activities could be utilised for other subjects and that one is not confined to only chemistry.*

*Why 'not really'?*

*I feel I was focusing too much on living out changes in my teaching practice suggested by my students (I was looking at me serving them) and not enough at their learning (I wasn't looking enough at them).*

*In what ways did you look at their learning?*

*I obtained written feedback from three repeating students and in November 1994 two other students and I had an audiotaped conversation about the project. I analysed some test results and I also elicited ratings from the students regarding their perceptions of their disimprovement/improvement in learning in the classroom and at home.*

*Okay, that's it for now; are you willing to be quizzed again?*

*Yes. I look forward to that! (phew!)*

The experiences of healthy tension described above (which act as prompts for action) and the resolution of the dialectical tensions within these experiences are, in my view, central elements within one's reflective practice in the Whitehead living educational theory approach (Whitehead, 1985 and 1993) to educational action research, where one, through negating the negation of valued practices, attempts to live prized educative-relationship values more fully in teaching/learning over time.

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The following were the teaching/learning communicative activities for Singularity Study One (Singularity Study One: pp. 10-11):

*In each chemistry class I would try to:*

- (1) Check each individual's Homework (see that an attempt was made) ----- CH
- (2) use the Students' Solutions to the homework ----- SS
- (3) Invite Questions from the students ----- IQ
- (4) give Written Homework for the next day ----- WH
- (5) Use the Book more ----- UB
- (6) Go more Slowly ----- GS
- (7) Explain more Clearly ----- EC
- (8) Check students' Understanding [see page 90 above] ----- CU

The *student sources* for each communicative activity are listed in the Appendices (pp. 306-307).

The student sources [Appendices (pp. 306-307)] help establish that the sixth form chemistry students had a significant input into the eight teaching/learning communicative activities utilized during the 1994 study: seven of the eight communicative activities were enacted to a statistically significant degree from the viewpoints of the sixth form students as shown in table S1.16 (Singularity Study One: pp. 31-33). [The relevant questionnaire and the resultant full details for table S1.16 are in the Appendices (pages 314 and 317 respectively).]

**Table S1.16. Students' mean ratings for the eight teaching/learning communicative activities.**

| <i>Teaching / Learning Activity</i>                   | <i>CH</i>   | <i>SS</i>   | <i>IQ</i>  | <i>WH</i>   | <i>UB</i>   | <i>GS</i>   | <i>EC</i>   | <i>CU</i>   |
|---|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|
| <i>Mean Value</i>                                     | <i>2.33</i> | <i>2.57</i> | <i>2</i>   | <i>3.48</i> | <i>.14</i>  | <i>1.29</i> | <i>1.86</i> | <i>1.67</i> |
| <i>Level of Significance [Wilcoxon's T statistic]</i> | <i>.01</i>  | <i>.01</i>  | <i>.01</i> | <i>.01</i>  | <i>None</i> | <i>.01</i>  | <i>.01</i>  | <i>.01</i>  |

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The following rating scale<sup>1</sup> was used:

| <b>Ratings</b>            | <b>-5</b>                | <b>-3</b>                     | <b>-1</b>                   | <b>0</b>    | <b>1</b>                 | <b>3</b>                   | <b>5</b>              |
|---------------------------|--------------------------|-------------------------------|-----------------------------|-------------|--------------------------|----------------------------|-----------------------|
| <b>Verbal Description</b> | <i>disimproved a lot</i> | <i>disimproved a good bit</i> | <i>disimproved slightly</i> | <i>same</i> | <i>improved slightly</i> | <i>improved a good bit</i> | <i>improved a lot</i> |

**In Singularity Study One, tables S1.9 (p. 26), S1.10 (p. 26) [Appendices (pp. 322-323)], and S1.11 (p. 27) [below] provide evidence of improved test results.**

Admittedly, the students' June Leaving Certificate test results were for physics and chemistry combined as a single subject with no way of getting the separate chemistry and physics marks for this subject from the DES (I rang the Department on this matter).

Nevertheless, I am including table S1.11 here along with some comments from the first singularity study to help me argue my case that most of the students' learning in chemistry improved between February 1994 and June 1994.

The following is an extract from Singularity Study One (page 27):

**Table S1.11. The students' Trial Leaving and Leaving Certificate results [1994].**

| <b>Physics/Chemistry (combined)</b> | <b>Number of students who obtained an honour</b> | <b>Number of students who obtained a pass</b> | <b>Number of students who failed</b> |
|-------------------------------------|--|---|--------------------------------------|
| <i>Trial Leaving (Feb)</i>          | <i>5 students</i>                                | <i>5 students</i>                             | <i>11 students</i>                   |
| <i>Leaving (June)</i>               | <i>10 students</i>                               | <i>5 students</i>                             | <i>6 students</i>                    |

***Sixteen students improved their results in physics and chemistry combined between February and June [see Appendices (page 324) for more individual detail]. I am making the reasonable assumption that some of this improvement was due to the students' improved effort and performance in chemistry.***

*[I think it is important to distinguish between student effort and student performance in tests. In my view, a student's test result is quite an accurate reflection of that student's present level of knowledge but only possibly an indication of the effort made by that*

<sup>1</sup> When creating the Verbal Descriptions for this rating scale, which I first used in a questionnaire in mid-May 1994 [Appendices, page 314], I coined the word 'disimprove' to mean the 'reversal' [= 'dis' (Collins, 1994)] of 'improve'.

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*student in achieving that performance mark. In recognising that students also have different capabilities (which are vast and perhaps unlimited if we choose to allow this possibility) and different aptitudes (rates of learning), I clearly realize there is a significant degree of complexity involved in coming to understand some chemistry. However, my argument above is based on the notion of reasonable probability (rather than a specific cognitive theory) that, for most of the sixteen sixth form students, both their efforts and their performances in chemistry improved between February 1994 and June 1994.]*

The sixth form chemistry students' self ratings for improved learning in the classroom and at home for chemistry (which were statistically significant improvement ratings) are displayed in tables S1.19 and S1.20 of the 1994 singularity study (Singularity Study One: pages 36 and 37) [Appendices (pp. 319-320); see also page 316 of the Appendices for important data for table S1.19 (page 319)]. Two provisionally true propositions which followed from the statistically significant student ratings for their enhanced learning in my first singularity study (Singularity Study One: page 37) were:

- *Most of the students' learning in the classroom (chemistry) improved.*  
*[sixteen students out of twenty-one students]<sup>1</sup>*
- *Most of the students' learning at home (chemistry) improved.*  
*[seventeen students out of twenty-one students]*

Today (April 3rd, 1998), I have once again checked the sixth form student ratings for improved learning in chemistry in the classroom and at home, and connecting to the above fact that '*Sixteen students improved their results in physics and chemistry combined between February and June*' [page 101], I see that twelve of these sixteen students gave themselves an improvement rating for their chemistry learning in the classroom and that two students out of the other four students gave themselves an improvement rating for their chemistry learning at home. This means that **fourteen students out of the sixteen students who improved their grades in physics and chemistry combined gave**

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<sup>1</sup> In relation to the sixth form students' views of their own classroom learning in chemistry, it can be seen in table S1.21 of the Appendices (page 316), which displays the students' responses to Q.1-Q.6 of the Final Questionnaire [Appendices (page 324)], that 7 students believed their chemistry learning improved slightly, 5 students believed their chemistry learning improved a good bit, and 4 students felt their chemistry learning improved a lot during the 1994 singularity study.

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**themselves an improvement rating for their chemistry learning in the classroom or at home (with six students of the twelve students also giving themselves an improvement rating for their home chemistry learning).**

In an effort to arrive at a provisionally true statement from the last five pages I will summarise:

**1. High probability: The sixth form chemistry students had a significant input into the eight teaching/learning communicative activities utilized during the 1994 study.**

**2. Fact: Sixteen students out of twenty-one students improved their results in physics and chemistry combined taken as a single subject between February 1994 and June 1994 - I was teaching the chemistry side; twenty students out of twenty-one students improved their marks in chemistry between November 1993 and May 1994 [Appendices (pp. 321-322)]. The 1994 study lasted from March 8th until May 17th 1994 during which time seven of the teaching/learning communicative activities were successfully enacted from the viewpoints of the majority of the sixth form chemistry students.**

**3. Fact: Fourteen students out of the sixteen students who improved their grades in physics and chemistry combined between February 1994 and the Leaving Certificate in June 1994 gave themselves an improvement rating for their learning of chemistry in the classroom or at home for the period between March 8th 1994 and May 17th 1994.**

**4. Reasonable Probability: There is a reasonable probability (rather than a specific cognitive theory) that the efforts, performances and therefore learning in chemistry improved between February 1994 and June 1994 for the majority of the twenty-one sixth form chemistry students.**

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Before stating my provisionally warranted belief based on the above four points, I would like to strengthen the reasonableness of the probability in point 4. In all of this activity I am conscious of not forgetting to treat students as complex individuals.

Table S5.1 and table S5.2, respectively, give the students' satisfaction for learning and teaching in chemistry (my subject) and other subjects. Table S5.1 compares very favourably with table S5.2 in showing that the students' satisfaction levels for their learning of chemistry in the classroom and at home and for my teaching of chemistry increased considerably between March 8th 1994 and May 17th 1994 compared with their satisfaction levels for learning and teaching in other subjects.

**Table S5.1. Students' satisfaction with their learning and my teaching in chemistry.**

| <b>21 Students</b>     | <b>Learning Classroom</b> | <b>Learning Home</b> | <b>My Teaching</b>   |
|------------------------|---------------------------|----------------------|----------------------|
| <b>March 8th, 1994</b> | 5 Yes 16 No               | 0 Yes 21 No          | 8Yes 12 No 1 Neither |
| <b>May 17th, 1994</b>  | 16 Yes 5 No               | 15 Yes 4 No          | 19 Yes 2 No          |

**Table S5.2. Students' satisfaction with learning and teaching in other subjects.**

| <b>21 Students</b>     | <b>Learning Classroom</b> | <b>Learning Home</b> | <b>Other Teaching</b> |
|------------------------|---------------------------|----------------------|-----------------------|
| <b>March 8th, 1994</b> | 12 Yes 9 No               | 4 Yes 17 No          | 12 Yes 9 No           |
| <b>May 17th, 1994</b>  | 10 Yes 10 No 1 Y/N        | 10 Yes 11 No         | 8 Yes 11 No 2 Other   |

Based on the above four statements and the information gleaned from the above two tables, my provisionally warranted belief is:



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**In successfully enacting seven collaboratively elicited and created teaching/learning communicative activities during March 8th - May 17th 1994 I helped the majority of twenty-one sixth form chemistry students to improve their learning in chemistry between February 1994 and June 1994 when the students did their Leaving Certificate examination in physics/chemistry combined. [See, also, page 62]**

At this stage, I believe I have established that, with my sixth form students (17-18 year-old students), I have been involved in *'eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities in the classroom'* and that, probabilistically, there has been *'enhanced student learning'* for the majority of the sixth form chemistry students in the 1994 study. But the question still remains, **'How do eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities in the classroom link to enhanced student learning?'**

In my view, the probabilities in **points 1 and 4** (page 103) [see, for example, page 110, page 163, and the Appendices (page 333 and pp. 341-343)] were much higher in the second and third singularity studies than in the first study of a singularity (1994) [which I consider to be the weakest of my studies, especially in relation to the quality of dialogue]; therefore, the 1995 and 1996 studies will be included along with the 1994 study in the discussion that follows. I again note the connection, as I see it, between

(i) eliciting/creating, enacting more fully and evaluating teaching/learning communicative activities and (ii) living out more democratic actions in the classroom, which leads me to claim that when I ask, *'How do more democratic actions in the classroom link to enhanced student learning?'*, I am effectively asking, *'How do eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities in the classroom link to enhanced student learning?'* [page 97].

In focusing on teaching/learning communicative activities between the sixth form students and me I am focusing primarily on social interactions which the sixth form students

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believed would help them to enhance their learning. Because of this emphasis on educative social interactions I am drawn to Vygotsky's notion of *the zone of proximal development*:

*the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers* (Vygotsky, 1978: p. 86).

Wood (1998) defines *the zone of proximal development* as

*the 'gap' that exists for an individual (child or adult) between what s/he is able to do alone and what s/he can achieve with help from one more knowledgeable or skilled than herself/himself.* (Wood, 1998: p. 26)

On a fundamental point of resonance with Vygotsky's 'social constructivism' and the emphasis it places on social interaction (Wood, 1998: p. 39) it is worth stating that Dewey's educational theory and psychology are founded upon the idea that there is an organic connection between the individual and society and that the mind of the individual is developed in and through the interaction of the two (Rockefeller, 1991: p. 237). In developing a more democratic and educative notion of 'society' for my classroom, it seems to me that both Dewey (1859-1952) and Vygotsky (1896-1934) have a positive contribution to make regarding social interactions within '*a mode of associated living, of conjoint communicated experiences*' (Dewey, 1916: p. 87) as these relate to students' zones of proximal development (Vygotsky, 1978: p. 86)<sup>1</sup>. In my own work, for the 1994, 1995, and 1996 singularity studies, the students were involved in creating the kinds of social interactions (which I named teaching/learning communicative activities) which the students felt would help them to improve their learning; and these teaching/learning communicative activities were 'generated' in response to the activating and socially interactive question, '*How can I help you to improve your learning?*' (Laidlaw and Whitehead, 1995: p. 2).

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<sup>1</sup> This issue is further developed in Chapter Eleven (pp. 254-255).

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While acknowledging that placing too much emphasis on ‘social interactions’ within teaching and learning could possibly lead to a form of learned helplessness for the student, one great attraction of Vygotsky’s theory, in my view, is that it offers a way of conceptualizing individual differences in ‘educability’; and in this regard it gains ground on Piaget’s theory which has little or nothing to say about the issue (Wood, 1998: p. 27)<sup>1</sup>. More of Vygotsky’s work will be discussed ahead, especially during the fourth study of a singularity (1997).

**However, in taking cognizance of individual differences in addressing the link between teaching/learning communicative activities and enhanced student learning, I believe it is important to hear individual ‘student voices’ as expressed through some specific sixth form student impressions of what they felt helped them to improve their learning during the 1994, 1995, and 1996 singularity studies. [pp. 107-118 ahead]**

### *Individual Sixth Form Student Impressions of What They Felt Helped Them to Improve Their Learning During the 1994, 1995, and 1996 Singularity Studies*

#### **Singularity Study One [March 8th - May 17th 1994]**

The following written comments from three repeating students, Paul H, Darren H and John D, state some of the activities that these students found helpful to their learning (see page 78 for the teaching/learning communicative activities and their codes):

*Paul H ‘I think the fact that you took time to explain more clearly (EC) the answers to the questions given for homework (WH) has helped this year. Last year it was more or less (1) Give homework (2) We do homework (3) Take answers down from board. Checking to see if answers are understood by students has also helped (CU).’*

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<sup>1</sup> Admittedly, ‘Piaget never set out to explore individual differences in rates of development’ (Wood, 1998: p. 27).

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*Darren H 'I personally found this year's teaching a lot better than last year's and I have a better understanding of the subject than last year. It may be the fact that you have taken a lot of interest in your students this year trying to get their views on your teaching methods and what things they would like to do more of (**empathic understanding**). Slowing down (GS) and getting the students more involved in the class (SS and IQ and CU) is of good advantage as the students can pick up things better when things are explained more easily (EC).'*

*'I think what you are doing now with the questionnaires will help you get to know what are the best methods for teaching future students and I hope you will have success with it.'*

*John D 'Last year there wasn't a lot of teacher/pupil interaction i.e. the student wasn't asked a lot of questions on any given subject. This year there is more emphasis on questioning a student (IQ - inviting questions from the students) and giving him an opportunity for the teacher to explain difficult areas in the course (EC). Last year, there was no groupwork. Different approaches have been tried to teach the student in a more understanding way (a **more empathic approach**); that is, groupwork gives the chance for a strong student to help a weaker student understand difficult areas (**preferential option for students with poorer results**).*

*A lot of questionnaires have been given out to help the teacher understand more of the students' needs. Both parties are being helped: the teacher learns different methods of teaching and the student is taught in a more understanding way (**more empathic understanding**).*

The three reports above were obtained from the three repeating students in late May 1994 as they reflected on and compared my March-May 1994 teaching with my March-May 1993 teaching (Singularity Study One: pp. 24-25).

The excerpt (Singularity Study One: page 43) used as 'student voices' evidence earlier in this chapter (pp. 86-87) includes a segment from a conversation with Paul M in November 1994, six months after the completion of the first singularity study (Paul M repeated the Leaving Certificate in 1995), and points to three teaching/learning communicative activities [WH, CH, and IQ (page 78)] that may have helped the sixth form students to improve their learning during the 1994 study.

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### Singularity Study Two [January 12th - March 30th 1995]

**Firstly**, the following are the teaching/learning communicative activities (with their codes)<sup>1</sup> and the statistical aspect of their evaluation [see Appendices (pp. 331-332) for more detail] by twenty-three sixth form mathematics students in the second study of a singularity (Singularity Study Two: pp. 72-73):

**LI** = *Linking to previous day's work.*

**ECSTOT** = *Explaining Clearly, Stating my Train Of Thought.*

**ECTW** = *Explaining Clearly, timing of my Talking when Writing on the blackboard.*

**GS** = *Going Slowly; that is, at a slow enough pace for all students to understand.*

**IQ** = *Inviting the students to ask Questions.*

**SU** = *Giving a SUMmary at the end of the lesson.*

**Reminder:** [1 = slightly, 2 = reasonable amount, and 3 = 'a fair bit']

- *My LI practice improved by a reasonable amount or more for the majority of students (15 students  $\geq$  rating 2).*
- *My ECSTOT practice improved from slightly to a reasonable amount for the majority of students (19 students  $\geq$  rating 1 and 10 students  $\geq$  rating 2).*
- *My ECTW practice improved from slightly to a reasonable amount for the majority of students (19 students  $\geq$  rating 1 and 10 students  $\geq$  rating 2).*
- *My GS practice improved slightly to a reasonable amount for the majority of students (17 students  $\geq$  rating 1 and 9 students  $\geq$  rating 2).*
- *My IQ practice improved by 'a fair bit' or more for the majority of students (15 students  $\geq$  3).*
- *My practice in SU improved from slightly to a reasonable amount for the majority of the students (19 students  $\geq$  rating 1 and 8 students  $\geq$  rating 2).*

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<sup>1</sup> See Appendices (pp. 326-329) for a description and explanation of the way in which the six teaching/learning communicative activities arose.

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*In summary, for a majority of the sixth form mathematics students:*

- *I improved from slightly to a reasonable amount for ECSTOT, ECTW, GS and SU over the time of the 1994/1995 enquiry (January 12th until March 30th);*
- *I improved by a reasonable amount or more for LI; and, finally,*
- *I improved 'a fair bit' or more for IQ.*

*[Again, 1 = slightly, 2 = reasonable amount, and 3 = 'a fair bit']*

*This summary, I believe, is consistent with the mean values ECSTOT (1.72), ECTW (1.67), GS (1.26), SU (1.59), LI (2.22) and IQ (2.7), which were judged to have .01 levels of significance [using Wilcoxon's T statistic].*

It is worth bearing in mind that every student improved his grade between February 1995 and June 1995 [Honour = A, B, C; Pass = D; Fail = E, F] and the overall improvement for the whole class was terrific as confirmed by the following table (Singularity Study Two: page 76). [see Appendices (page 333) for the data leading to table S2.12 below]

**Table S2.12. Numbers of students obtaining an honour, pass, and fail in mathematics.**

| <b>Examination</b>                                      | <b>Number of Students Obtaining an Honour</b> | <b>Number of Students Obtaining a Pass</b> | <b>Number of Students Failing</b> |
|---|---|--|-----------------------------------|
| <b><i>Trial Leaving Certificate (February 1995)</i></b> | <i>3 students</i>                             | <i>8 students</i>                          | <i>12 students</i>                |
| <b><i>Leaving Certificate (June 1995)</i></b>           | <i>16 students</i>                            | <i>6 students</i>                          | <i>1 student</i>                  |

I believe my improved practice during this classroom action research enquiry, which lasted from January 12th (1995) until March 30th (1995), contributed to the sixth form students' improved understanding of mathematics between February and June, and to their better examination results in June 1995.

**Secondly**, regarding the connections between what I was doing and the students' learning, the following are some incisive written comments from three of the sixth form

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mathematics students who acted as 'critical friends' to me during the 1995 singularity study (Singularity Study Two: p. 42 and p. 53):

*Kenneth K (May 3rd, 1995)*

*In opening I feel that the second video was much more productive than the first and that the discussion afterwards was, in my opinion, very successful. In general I find that your explaining of your train of thought (ECSTOT) has definitely improved which in conjunction with the explanation of other approaches [generating alternatives], both explains to those who could not do the question, how to do it, and also broadens the thought process of those who could, thus promoting adaptability.*

*In relation to the statistical analysis you performed, I would say that the figures certainly have some meaning. In relation to the 1.95 figure [for Understanding of Mathematics (UM)], I would say that this confirms that the majority of the class feel that their understanding of maths has shown a reasonable improvement, and that a notable proportion of this was due to your changing practice. In conclusion, I feel that your change in practice, although not huge [I agree], has led to a more relaxed atmosphere in the classroom, leading to students having greater confidence in themselves and therefore being able to take advantage of the class so as to better their understanding of mathematics.*

*Kieran McG (May 19th, 1995)*

*'Did my understanding of mathematics improve between the making of the two videos?' [between February 2nd and March 30th] Yes. Why?*

*I didn't think that this greater understanding was achieved by any one factor. If one aspect of the learning process is altered it will not in itself bring about better understanding. There were a host of changes; more study being done, increase in maturity, working towards a goal, familiarity with the course.*

*'Was a better working atmosphere created?' Yes. Why?*

*Your research may have been a contributory factor here. I think it [my research] - not because of the actual question you were seeking to answer [How can I help you to improve your learning and contribute to your educational development?] but because you involved the class at a basic level in your research - lessened the gap between teacher and student. This factor plus the maturity of the class in their attitude to work did create a good atmosphere for the last few months' work.*

*'How big a contributory factor was it?'*

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*Impossible to say! But I would guess somewhere around helpful and worthwhile.*

*Ronan M (May 22nd, 1995)*

*I think that the 'ratings' of teaching practice are a fair reflection on the efforts made by the teacher to adapt to the student suggestions of January 12th, 1995. [see Appendices (page 331)]*

*The students have given a 1.95 rating [mean value] to their understanding of mathematics (UM) [see Appendices (page 332)]. So what does this figure mean? I think that this figure of 1.95 means that students are now able to grasp/understand topics whilst they are being covered in school rather than having to study them at home and, in this sense, their understanding of maths has improved.*

Paul M's comment in the 1994 study that *'when you came in here you are actually being listened to for once'* (page 87) and Kieran's McG's comment in the 1995 study,

*'you involved the class at a basic level in your research - lessened the gap between teacher and student'* (page 111),

point to improved communication between the sixth form students and me during the two enquiries. To my mind, this higher quality communication was chiefly articulated and embodied in the collaborative elicitation/creation, greater enactment, and evaluation of the teaching/learning communicative activities during the respective studies of singularities.

Kenneth's comment that my

*'change in practice, although not huge [I agree], has led to a more relaxed atmosphere in the classroom, leading to students having greater confidence in themselves and therefore being able to take advantage of the class so as to better their understanding of mathematics'* (page 111)

was confirmed in part by Ronan's comment above that

*'students are now able to grasp/understand topics whilst they are being covered in school rather than having to study them at home and, in this sense, their understanding of maths has improved'.*



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Kenneth's comments (page 111) together with Kieran's appreciation of the multifactorial nature of the process of students gaining a greater understanding in mathematics (page 111) reflect the complexity of articulating the link(s) between teaching/learning communicative activities and individual enhanced student learning, especially with regard to the fine-tuned *why* and *how* of the *what* that helps to bring about greater understanding for the student, especially when students' views on this matter are taken into account.

I have written earlier (page 90) that '*one could argue that I was "bifurcating content and teaching processes"*' (Shulman, 1987a: p. 6) *in the first two singularity studies*'. In the third singularity study (1996), as well as eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities, I attempted to get closer to specific student learnings in chemistry. **Did the 1996 study bring me any closer to the *how* and *why* of the *what* that helped the student to improve his learning?**

### Singularity Study Three [November 23rd 1995 - February 5th 1996]

**Firstly**, I will give the rating scale, the nine teaching/learning communicative activities<sup>1</sup>, and the students' ratings for each of these activities over the time of the enquiry (Singularity Study Three: pp. 51-52).

*The following scale was used:*

| <b>Ratings</b>            | <b>-5</b>                | <b>-3</b>                     | <b>-1</b>                   | <b>0</b>    | <b>1</b>                 | <b>3</b>                   | <b>5</b>              |
|---------------------------|--------------------------|-------------------------------|-----------------------------|-------------|--------------------------|----------------------------|-----------------------|
| <b>Verbal Description</b> | <i>disimproved a lot</i> | <i>disimproved a fair bit</i> | <i>disimproved slightly</i> | <i>same</i> | <i>improved slightly</i> | <i>improved a fair bit</i> | <i>improved a lot</i> |

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<sup>1</sup> Member-Checking for Singularity Study Three (1996) is mentioned on top of page 79. See Appendices (pp. 335-336) for the Initiating Questionnaire and the Member-Check Questionnaire for this singularity study.

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*The nine codes and their meanings are:*

***IQ*** *Inviting the students to ask Questions.*

***ECDPT*** *Explaining Clearly regarding Details, Practical applications, and Talk before practical.*

***ECTW*** *Explaining Clearly regarding timing of Talking when Writing on the board.*

***GSM*** *Going Slowly when doing the more difficult Mathematical questions.*

***GFT*** *Going Faster with the non-mathematical Theory.*

***CSU*** *Checking Students' Understandings of class/laboratory work and homework.*

***CLH*** *CLarifying the Homework regarding a little direction for more challenging questions.*

***CH*** *Checking each student's Homework and grading it (focusing on learning progress ).*

***TEST*** *TEST at the end of each chapter.*

**Table S3.8.** *Students' responses to the 'final' questionnaire for the nine teaching/learning communicative activities.*

| <i>Name</i>       | <i>IQ</i>   | <i>ECDPT</i> | <i>ECTW</i> | <i>GSM</i>  | <i>GFT</i>  | <i>CSU</i>  | <i>CLH</i>  | <i>CH</i>   | <i>T</i>    |
|-------------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <i>Eamonn F</i>   | 0           | 5            | 0           | 5           | 1           | 5           | 1           | 5           | 1           |
| <i>Ethan G</i>    | 3           | 3            | 1           | 5           | -1          | 0           | 3           | 5           | 5           |
| <i>Afnan HZ</i>   | 1           | 5            | 0           | 3           | 3           | 1           | 1           | 3           | 1           |
| <i>James K</i>    | -1          | 3            | 1           | 3           | 3           | 5           | 3           | 5           | 1           |
| <i>David M</i>    | 5           | 5            | 0           | 5           | 5           | 5           | 3           | 5           | 3           |
| <i>David O</i>    | 1           | 3            | 3           | 5           | 5           | 3           | 3           | 5           | 3           |
| <i>Gary P</i>     | 1           | 3            | 3           | 0           | 1           | 3           | 3           | 3           | 0           |
| <i>Aidan R</i>    | 3           | 3            | 0           | 5           | 3           | 3           | 3           | 5           | 3           |
| <i>Kevin R</i>    | 3           | 5            | 3           | 3           | 5           | 5           | 5           | 5           | 5           |
| <i>Paul R</i>     | -1          | 5            | 1           | 5           | 5           | 5           | 3           | 5           | 5           |
| <i>Jarlath T</i>  | 0           | 5            | 0           | 3           | 5           | 5           | 0           | 5           | 5           |
| <i>Mean Value</i> | <b>1.36</b> | <b>4.09</b>  | <b>1.09</b> | <b>3.81</b> | <b>3.18</b> | <b>3.64</b> | <b>2.55</b> | <b>4.64</b> | <b>2.91</b> |

*The mean value 1.36 for IQ is statistically significant ( $T = 6$ ,  $N = 9$ ) at a .05 level . The mean value 1.09 for ECTW is also statistically significant at a .05 level. All of the other means are statistically significant at a .01 level , using the Wilcoxon T statistic, which doesn't necessarily have to be used if a teacher-researcher felt that the overall mean value and the particular column of ratings given by the students provide sufficient information. [Here, it is important to acknowledge my openness to the possibility of*

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*transferability (Lincoln and Guba, 1985: p. 297) and relatability (Bassey, 1995: p. 111) in my account.]*

**Secondly**, Kenneth's statement regarding a connection between a more relaxed atmosphere and enhanced learning in the 1995 study (page 111) was echoed by David M and Paul R in the 1996 study (Singularity Study Three: pp. 34-35):

### *Some Student Value-Reasons for Their Improved Learning*

#### *Less Tense - More Relaxed*

**James F** *In what way did you think the meeting was productive? Do you remember when we had the discussion?*

**David M** *Em, I think it improved the teacher/student relationship. [see also David M's Singularity Study Three written comment (page 89) and Kieran McG's written comment about lessening the gap between teacher and student in the 1995 study (page 111)]*

**James F** *Could you say a little bit more about that?*

**David M** *Em, it (silence)*

**James F** *Do you want me to put it on pause?*

**David M** *It's alright. It's a little less tense in class to be honest.*

**James F** *Less tense, right. --- Do you think that you feel more relaxed or you feel that the class is more relaxed or both?*

**David M** *The class in general.*

**James F** *The class in general. Paul R, do you agree with that?*

**Paul R** *Yeah. I feel that - before the meeting the class was all tense like - now it's relaxed more. You can - I think you can learn more in a relaxed atmosphere ---*

#### *Good Pressure*

**James F** *--- Now, okay you've said that the relaxed atmosphere can maybe help your learning Paul, but it's you yourself that - you are doing the learning. So, what are you doing that is actually helping your learning.*

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*Paul R* Eh well before it - there wasn't so much pressure on doing the homework maybe and - I used to - do - not a very good effort, just an ordinary effort - maybe get the homework and then you came in and maybe ask the question. You can get that question right. But now when you collect the homework and you're grading it, I feel I have to really get down and do the homework and get it done properly and every question answered properly.

*James F* So, in ways you're more accountable for what you do.

*Paul R* Yeah. I think that the pressure also is maybe good pressure as well ---

*James F* --- David, what about yourself on that?

*David M* Yeah. I agree with that. I work better under pressure definitely ---

*Paul R* --- although there is a more relaxed atmosphere there is more pressure on us. I think that most of us respond well to the greater pressure.

*James F* And Gary, do you want to say anything on that?

*Gary P* --- you have improved our learning as well and it kinda cuts both ways. Whenever, I think anyway, whenever you see us learning the stuff - well it kinda motivates you as well.

Thirdly, in the 1996 singularity study, some of the sixth form chemistry students articulated connections between specific teaching/learning communicative activities and their enhanced understanding of electrolysis (a specific content area in chemistry):

### [Singularity Study Three: Page 31]

*David O*

*David O* Going slower with the mathematical theory (GSM) has improved my knowledge about Faraday's Law. (January 18th, written comment after the second test which included two questions on Faraday's First Law).

*Paul R*

*Paul R* I feel that going slowly with the (mathematical) theory (GSM) and the explaining of difficult parts (ECDPT) has helped me greater (sic). At the start I was unsure about anode and cathode reactions, that is, potassium iodide, but now I realise where I went

## Part Two

*wrong and feel more comfortable with it. (January 18th, written comment after the second test).*

*Both David and Paul are offering some reasons (GSM and ECDPT) for their perceptions of their improved learning and our observations (examination results) of their improved learning.*

### [Singularity Study Three: Pages 44-45]

#### *Student's Voice Regarding His Own Learning*

**James F** *Okay, so Afnan; why do you think your own understanding in electrolysis improved?*

**Afnan HZ** *- I feel that - you went more slowly into explaining in more detail - how things were discharged for example -- and even in the mathematical theory you showed - just ways that I understood much better the way - just show in more detail how to do things in general.*

**James F** *I know but - that's about me. I'm asking you to talk about you --*

**Afnan HZ** *That's how I learn, sir.*

**James F** *O yeah.*

**Afnan HZ** *You see like the way you speak more slowly and - go more slowly --- I take it all in more - that's how I feel I learn anyway -*

**James F** *Well, let's say your homework practice. You said that your homework practice improved a good bit and that's you working on your own at home without me. So, I'm going to ask you now, what improvement took place in your homework practice?*

**Afnan HZ** *Well definitely I paid more attention and -*

**James F** *So you were more motivated. (leading but possibly accurate)*

**Afnan HZ** *Definitely, yeah.*

**James F** *So I'm asking you, what caused you to be more motivated?*

**Afnan HZ** *Because you were correcting them (homework) and - and I want to, you know, do well ---*

*(Audiotaped Conversation, February 1st, 1996)*

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*The above excerpt indicates that in going 'more slowly' and 'explaining in more detail' I helped Afnan to understand electrolysis more fully and also that my correction of homework (CH) helped Afnan to pay 'more attention' in his homework practice because he wanted to do well. It seems I encouraged Afnan to tap a little more into his own 'inner drive' (one interpretation of motivation) to learn.*

A common theme running through the above dialogues from the 1996 study is that I needed the students to tell me about their understanding of what they were doing which they believed helped them to improve their learning. These were all sixth form students (17-18 year-old students) with a reasonable degree of maturity and I value their understandings, not in a naive manner, but critically. Rudduck (1996) has stated that

*'the conditions of learning that are common in secondary schools do not adequately take account of the social maturity of young people.'* (Rudduck, 1996: p. 13)

In my view, the above dialogues constitute exemplars of situations where I was taking more accurate account of the social maturity of sixth form students. Rudduck's paper will be discussed more fully in Chapter Six. Meanwhile, returning to the question that I asked earlier (page 113), **'Did the 1996 study bring me any closer to the *how* and *why* of the *what* that helped the student to improve his learning?'** I believe it did, both in bringing about a stronger connection between eliciting/creating/enacting more fully particular teaching/learning communicative activities and improved student learning in electrolysis, and in confirming that the process of collaboratively eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities with my sixth form students can lessen the gap between teacher and student and help to bring about a 'more relaxed atmosphere' in the classroom which can in turn help to bring about more learning for some of the students.

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Fontana (1995), in discussing theories of learning, states:

*it is a common complaint that theories of learning, for all their undoubted complexity, are not really that much help when it comes to the practicalities of helping students learn. Descriptions of learning, on the other hand, are of much more immediate benefit because they describe the kinds of activity carried out by both pupil (student) and teacher that appear to lead to enhanced levels of learning on the part of the former. (Fontana, 1995: p. 143)*

I may have focused too much on what I was doing and not enough on what the students were doing when learning was taking place during the first three singularity studies [unintended consequence of action]. However, in responding to the question, '*How do more democratic actions link to enhanced student learning?*', I claim that the main means or 'links' are collaborative elicitation/creation, greater enactment, and evaluation (student comments and student ratings) of the teaching/learning communicative activities during each of the singularity studies. Further, I believe the connection<sup>1</sup> between teaching/learning communicative activities and individual student zones of proximal development through the notion of 'social interaction' helps bolster the power of my developing theory as a theory that can help nurture simultaneously more democratic actions and more individual student learning. Theory in this arena is articulated primarily through descriptions and explanations of understandings, judgements, decisions and actions as we (the students and me) worked at helping the students to improve their learning. Particular standards of judgement (e.g. an educational standard of judgement as in 'living out more democratic actions as I help the students to improve their learning') constitute a significant part of the explanation of my practices and these same criteria also constitute some of the standards of judgement by which I wish the validity of my account to be judged by others. My main contention here is that there are more than descriptions involved in this form of theorising.

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<sup>1</sup> This connection is clearly a probabilistic notion but it is a case of reasonable probability in my view.

## Part Two

However, regarding the connection between specific teaching/learning communicative activities and enhanced individual student learning in specific content areas of mathematics and chemistry, I fully acknowledge that there is a need for a greater articulation by the students of their own learning. Therefore, I clearly haven't fully exhausted the *why* and *how* of the *what* that enhances each individual student's learning, and in this matter one could argue that I have, at most, merely described certain activities that appear to help students' learning.

Nevertheless, in focusing on the elicitation/creation, greater enactment, and evaluation of teaching/learning communicative activities as part of my reflective practices there is also a sense in which the values lived out more fully during the singularity studies (e.g. valuing democratic actions, listening to and acting on student voices, valuing dialogue, sharing power) constitute both **descriptions and explanations** for the kinds of activities in which the students and I engaged during the 1994, 1995, and 1996 studies of singularities. Elliott (1989) states:

*Whitehead's point that the reflective practices of teachers embody descriptions and explanations of how to realise educational values is highly consistent with Aristotle's account of moral enquiry in his Ethics. (Aristotle) argued that moral values cannot be understood by simply examining the meaning of the terms we use to express them in language. This is because moral values are fundamentally defined in and through the actions we undertake to realise them. The implication of this is that our social practices embody 'descriptions' of our values. And we only develop such 'descriptions' by reflecting upon our actions and ways of improving them.*

*Aristotle's account also illuminates the inseparability of ends and means in moral practices. Ends as values are realised in the courses of action we engage in as means. This is why such courses of action can offer not only descriptions of values but also explanations of how they are realised. (Elliott, 1989: p. 93)*

I now bring what I hope is appropriate closure to this section with a respectful and justified appreciation of the complexity of establishing connections between more democratic actions and enhanced student learning.



## Part Two

In the next chapter, somewhat like taking a compass reading, I return briefly to the question, '*How do I theorise?*' (pp. 75-76). I then focus more fully on the notions of 'student voices' and 'sharing power' within the context of democratising the classroom, critically relating my democratic understandings and actions to some of those in the literature.

## Chapter Six: Democratising the Classroom - A Dialectical Discussion

### 1. How Do I Theorise?

In responding, at this juncture, to 'How do I theorise?', I once again draw on the following metaphor (page 75) and its picturing function as a way into understanding my process of theorising:

*----- the fields occupy both sides of a v-shaped valley. Four fields are on one side and it is possible to look over and see the fifth field. But, most importantly for this thesis, when I go over to the fifth field (my development of theory in my thesis) to become familiar with its inclinations and growth, I can look across to the other side and see the four fields at the same time or, if need be, focus on each of the four fields individually, thereby remembering the land through which and from which I have walked. I can also cross the valley again if I wish or am wished by the poetic power of the metaphor and view the fifth field from the four fields that I know reasonably well. Eventually the two sides of the valley will merge into one and become the ground (a new first field) from which and through which my future teaching and research practice will grow.*

The excerpt below from a dialogue between Freire and Macedo (1995) resonates powerfully, in my view, with the above metaphor, with my belief in the non-hierarchical and intimate relationship between practice and theory, and with my approach of theorising from practice and meeting, creating, and developing theory through dialogic reflections with self and others, including relevant literature<sup>1</sup>. Such an approach also receives support from Walker (1995: pp. 17-18), who stresses the importance of textual and social encounters along with practical action in the generation of theoretical understandings in action research.

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<sup>1</sup> Here, I draw attention to the following in my Abstract: *My work also shows that I have become a more reflective practitioner as I dialogue with the writings of other educators whilst seeking to relate my values concerning democratic action and social justice to my classroom teaching.*

## Part Two

*Macedo* ---- I have been in many contexts where the over-celebration of one's own location and history often eclipses the possibility of engaging the object of knowledge<sup>1</sup> by refusing to struggle directly, for instance, with the readings, particularly if these readings involve theory.

*Freire* Yes. Curiosity about the object of knowledge and the willingness and openness to engage theoretical readings and discussions is fundamental. However, I am not suggesting an over-celebration of theory. We must not negate practice for the sake of theory. To do so would reduce theory to pure verbalism or intellectualism. By the same token, to negate theory for the sake of practice, as in the use of dialogue as conversation [rather than understanding 'dialogue as a process of learning and knowing'], is to run the risk of losing oneself in the disconnectedness of practice. It is for this reason that I never advocate either a theoretic elitism or a practice ungrounded in theory, but the unity between theory and practice. (Freire and Macedo, 1995: p. 382)

It is with this kind of approach to practice and theory within my theorising that I now further address the notion of democratising the classroom.

### 2. Democratising the Classroom

*Voice, quite simply, refers to the various measures by which students and teachers actively participate in dialogue. It is related to the discursive means whereby teachers and students attempt to make themselves 'heard' and to define themselves as active authors of their worlds* (Giroux and McLaren, 1986: p. 235).

Giroux and McLaren (1986), as part of their strategy for reconceptualizing teaching and public schooling in the United States of America in order to promote democratic citizenry, outline a teacher education curriculum that links the critical study of power, language, culture, and history to the practice of a critical pedagogy (Giroux and McLaren, 1986: p. 213). Within a white male population in a boys' Catholic diocesan school (with women and men on the staff) in the NW of the Republic of Ireland, my own approach is not meta-structural but micro-dynamic and dialogically outward (e.g. key respondents) involving studies of singularities in the classroom. Despite the different arenas for, and different

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<sup>1</sup> I don't think Macedo necessarily means 'objective knowledge' here because of the emphasis both he and Freire place on dialogue as a process of learning and knowing (Freire and Macedo, 1995: pp. 377-402). It seems to me that in a dialogic coming to know there is a sense in which all such knowledge is intersubjective in essence rather than merely objective or merely subjective.

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approaches to, theory construction, I am at one with Giroux and McLaren (1986: p. 213) in their emphasis on a pedagogy that *'values student experience and student voice'*. However, within the common ground of valuing 'student experience and student voice' there are different dispositions: Giroux's and McLaren's (1986: p. 236) utilization of the term is primarily socio-cultural in encouraging curricular dialogue in the classroom related to the historical, economic, and cultural traditions of the students and their surrounding communities, whereas the 'student experience and student voice' in my singularity studies refer to the students' experiences, understandings, and judgements of my teaching and their learning. It seems to me that my students and I engaged in more democratic actions in the classroom primarily in order to help the students to improve their learning in mathematics and chemistry whereas Giroux and McLaren wish to further democratise learning and teaching primarily in order to nurture democratic citizenry both in the school (understood as a political organization) and in the wider community. In short, I see Giroux's and McLaren's approach as predominantly political and my own approach as predominantly pedagogical. Nonetheless, in terms of valuing individuals and dialogue, I believe there is sufficiently significant and similar democratic intent within the two modes of valuing 'student experience and student voice' to warrant a mention.

Rudduck (1996), in urging the undertaking of *'a serious review of the conditions of learning for all young people within the present framework'* (Rudduck, 1996: p. 1), in Britain, concomitantly desires to further authenticate and extend the meanings of 'partnership' and 'change' in education to include 'students' voices'. When focusing on

*rethinking and reshaping the deep structures - or 'grammar' - of schooling that hold habitual ways of seeing things in place* (Rudduck, 1996: p. 1),

Rudduck sees *'assumptions about what a pupil is'* as constituting some of the *'deep structures of schooling'* (Rudduck, Chaplain, and Wallace, 1996: p. 177). In particular, Rudduck (1996: p. 13) stresses the urgent need to review the conditions of learning in secondary schools in order to ensure that they offer appropriate support to young people

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and take more accurate account of their social maturity in the serious task of learning [page 118].

In connection with promoting more democratic actions in the school and the classroom, Rudduck has also earlier emphasised the importance of listening to ‘student voices’:

*We need, in particular, to hear the voices of students and to give attention to their perspectives on the experience of being a learner in school* (Rudduck, 1995: p. 11)<sup>1</sup>.

I concur with Rudduck’s contention that ‘expert witness’, rather than partner in change (Rudduck, 1996: p. 13), better describes what is possible for young people in schools; the term ‘partner in change’, in my view, disguises the very real differences in power between those who are paid to provide a service and the learners who receive no money while learning. Additionally, like Rudduck, I too am drawn to, what I believe is, the more realistic notion of granting students a ‘limited franchise’ (Polan, 1989).

In this regard, Polan (1989) argues that

*it is no compromise or betrayal of democratic principles, nor is it a sham or a confidence trick to extend to children in school a franchise that is limited, and for the already enfranchised to determine what those limits might be.* (Polan, 1989: p. 41)

While Polan may have overlooked the possibility of an input from some senior students in determining ‘*what those limits might be*’, his argument for a ‘limited franchise’ for students within ‘*increasingly complex, sophisticated, and internally differentiated*’ schools (Polan, 1989: p. 39) is partly based on articulating a distinction between direct democracy and representative democracy, where only the former is ‘*devoid of any limitations upon the political participation of any member of the political community*’,

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<sup>1</sup> Rudduck, J (1995) ‘*Enlarging the Democratic Promise of Education ...*’, British Educational Research Journal, Vol. 21, No. 1, 1995. Presidential Address to the British Educational Research Association given at the University of Oxford, September 1994, to mark the twentieth anniversary of the Association.

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whereas in the latter *'elected representatives will have greater access to political deliberation and decision-making than the electors themselves'* (Polan, 1989: p. 40).

Acknowledging that students don't vote in political elections until they are eighteen and also that they don't vote teachers into 'office', there is I believe a usefulness in importing an extension of the meaning of the term 'representative democracy' into the decision-making processes within schools and classrooms where the teacher can, in a sense, be regarded as an 'elected representative'. For me, while relationships within the whole school are important, the decision-making regarding learning and teaching in my own classroom is the main focus in my enquiry as this is my prime arena of service; that is, I am employed primarily to teach in a classroom. It is my belief that in my own enquiry, the elicitation and creation of the teaching/learning communicative activities with the sixth form students (17-18 year-old students) during the early stages of the 1994, 1995, and 1996 singularity studies became progressively more representative of 'student voices' in the democratic sense of the term [pp. 78-79].

The point I am making here is that, in helping the majority of my sixth form students to improve their learning during the 1994, 1995, and 1996 singularity studies I have learned to listen to my 'students' voices' more fully and have granted them a 'limited franchise' in deciding how I teach [this includes the elicitation/creation and evaluation of teaching/learning communicative activities]. Admittedly, as stated earlier in the thesis (pages 82, page 87, and page 99), I may have inadvertently nurtured a form of learned helplessness in my students in focusing perhaps too much on my teaching and not enough on their learning.

*The phrase (learned helplessness) describes what happens to people who are prevented from doing things for themselves; over time, because other people do them for them, they learn to be incapable of doing them for themselves.* (Breakwell, 1986: p. 122)

[Pat D'Arcy, when giving feedback on Part Two of my thesis at our June 25th 1998 meeting, stated *'but you weren't doing this!'*]

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Nevertheless, despite this 'living contradiction' element of my teaching practice, overall I believe I have engaged in more democratic actions with my students in the classroom during the first three singularity studies and that my improved teaching did help the majority of the students to improve their learning in each of the three singularity studies.

While Rudduck, Chaplain, and Wallace (1996: pp. 173-174) have stressed the importance of listening to students' voices, their focus is on whole school improvement in coming to the conditions of learning from the pupils' perspective. In contrast, my own work utilized 'student voices' to elicit teaching/learning communicative activities that would help the students to improve their learning in the classroom and at home.

Further, Rudduck, Chaplain, and Wallace (1996) talked with pupils over four years but

*'did not go so far as — casting them in the role of co-researchers and they had no sense therefore that their words were actually changing things - only that, perhaps, they might — it is the next generation of pupils who will benefit and not those who provided the insights -----'* (Rudduck et al, 1996: pp. 9-10).

Therefore, another and highly significant way in which my approach differs to Rudduck's approach, in my view, is that my students experienced their words changing things, perhaps slightly - but changing things, nonetheless [e.g. pp. 111-112].

Rudduck (1996), in relation to 'student voices', claims that

*it is difficult to find examples of 'authentic partnerships' in action and maybe they don't and can't exist except in the context of a particular teacher's work with a particular group of students.* (Rudduck, 1996: p. 13)

Rather than engaging in 'authentic partnerships', I believe I have engaged in authentic enfranchisement of student voices in moving beyond the situation where *'teachers may want to avoid, initially, involving students in the evaluative discussion of lessons'* (Rudduck, 1996: p. 13): I believe I have responded with a significant degree of courage in

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1994, 1995, and 1996 to the call for *'teachers and students - to become more practised in joint evaluations of teaching and learning'* (Rudduck, 1996: p. 3). Again, I wish to stress that eliciting/creating and enacting more fully teaching/learning communicative activities involved consciousness raising and praxis as well as technique and method.

Additionally, I believe that my work is 'inside-looking-out' educational action research whereas Rudduck's project with the students, which operated *'in an action frame without being action research'* (Rudduck, Chaplain, and Wallace, 1996: p. 10), was 'outside-looking-in' research. Each kind of research can complement the other in my view. It is perhaps much more significant to note that a democratic and democratising inclination to include and act on 'student voices' is common to the two kinds of enquiries.

Returning to Polan's work, his arguments for granting students a 'limited franchise' within the decision-making processes in schools are centrally based on the increasing complexity of the nature of organisations<sup>1</sup> and on the fundamental inefficiency of command/hierarchical models in achieving their own aims (Polan, 1989: p. 35) because such models deny the complex communication subsystems and social differentiation operative within schools as organisations. Polan concomitantly argues for the need to create *'non-hierarchical communicative communities'* which will include significant student messages on means and ends of the school organisation (Polan, 1989: p. 40). While agreeing with the notions of improving the quality and extending the content of communication between students and teachers within schools, my own arguments grow from the notion of service within the profound and perhaps misleadingly simple question, 'How can I help you to improve your learning?' (Laidlaw and Whitehead, 1995: p. 2). That is, my work starts with students as persons and human beings within the classroom and theorises outward whereas Polan's system-and-subsystems-argument approach starts with the school as an organisation caught up in the flux of an 'inevitable' social evolution (Polan, 1989: p. 29) and then theorises inward. While I am wary of the 'inevitable' aspect

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<sup>1</sup> Polan acknowledges that his argument on organisations and democracy is based fundamentally on the work of the German social theorist Niklas Luhmann (Polan, 1989: p. 28).



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of Polan's arguments in that it carries a deterministic connotation in my view, he has helped me to import a more informed notion of 'limited franchise' into my understanding of what is possible in the expression of 'student voices' within teaching and learning in my own classroom.

Regarding 'student voices', Polan (1989: p. 43) urges inclusion of students in negotiation over some of the 'professional' aspects of school policy<sup>1</sup>

*'despite the quite likely possibility that business will come to include comments upon the performance -- of teachers themselves' (Polan, 1989: p. 43).*

In my classroom approach, in contrast to Polan's whole-school approach, I *begin* by requesting comments from my sixth form students about my teaching performance in relation to their learning; that is, a possible outcome of Polan's approach has been an initial stage in my educational action research enquiries in 1994, 1995, and 1996. Polan is effectively telling teachers that they are going to become more accountable to students, while I am using the students' views of my teaching in part to respond to the accountability movement. Again, as in the case of the relationship between Rudduck's approach and mine (page 128), there is an argument for the complementariness of Polan's work and mine regarding the enfranchisement of 'student voices' within the process of further democratising relationships and communication within schools and the classroom, especially in connection with obtaining and responding positively to students' views of learning and teaching. While Polan's approach may lead to students' comments on teaching, my own approach utilizes students' comments on teaching to help those same students to improve their learning.

Finally, despite the overall appeal, for me, of the democratic impulse informing and forming Polan's paper, I view his statement that

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<sup>1</sup> Polan includes no details.

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*'teachers are, by and large, unaware of what is going on --- teachers' dismaying level of political ignorance ---- their ignorance of their own capacities as political actors'*  
(Polan, 1989: pp. 35-36)

as an unsubstantiated generalisation. It is also a statement which, perhaps inadvertently, leads to the elevation of Polan's viewpoint to a command/hierarchical position, knowledge-wise, in relation to other teachers' viewpoints, a position his own social-evolutionary stance to the democratisation of communication and relationships within schools as organisations would quickly deconstruct.

Although Giroux's and McLaren's (1986) and Polan's (1989) approaches are grounded in meta-theoretical perspectives utilizing critical social theory, Giroux's and McLaren's argument is predominantly political while Polan argues for democratisation of organisations from the standpoint of accelerating tendencies in social evolution. However, neither Giroux and McLaren nor Polan consult high school/secondary school students in constructing their theories about student involvement; no student voices are heard in their papers. This is not to deny the usefulness of their theories in encouraging teachers to further democratise educative relationships with their students in the classroom, but it does beg the question, 'On what basis can a teacher in a classroom relate to papers that argue for the expression of student voices when those same papers give no expression whatsoever to student voices?'. Whilst I have no desire to make a cult out of personal experience or of researchers giving 'witness', I am much more impressed by one who encourages a particular value (e.g. listening to and acting on student voices) and concomitantly shows evidence of living that value than by one who argues for a particular way of being without showing any personal practical evidence of engaging in that way of being.

Rudduck et al (1996: pp. 173-174), in contrast to Giroux and McLaren (1986) and Polan (1989), include, listen to, and act on student voices and come to *'six principles which*

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*make a significant difference to learning*<sup>1</sup> from the pupils' perspective. Rudduck et al argue that what pupils say about schooling can be used as a basis for school improvement: they began interviewing eighty twelve-year-old students in 1991 and finished in 1995 when the students were 15-16 years old. I argue somewhat differently that what students say about learning and teaching in the classroom can be used to promote improved learning both in the classroom and at home: I have worked with a total of seventy-two sixth form 17-18 year-old students (different groups) between 1994 and 1997.

As already stated (page 126), when I involved my sixth form students in eliciting/creating and evaluating the teaching/learning communicative activities in 1994, 1995, and 1996, I believe I granted a 'limited franchise' to my sixth form students in deciding how I should teach; and in doing this I believe I was engaging in more power sharing with my students in that the students were allowed opportunities to direct my teaching. Therefore, it is my belief that there was a fundamental change in the power relations between the sixth form students and me in the 1994/1995/1996 singularity studies. In the 1995 singularity study, Kieran McG (Singularity Study Two, p. 42) stated '*you involved the class at a basic level in your research - lessened the gap between teacher and student*' (page 111); that is, our power relations became less unequal [see student comments (pp. 86-89)]. It seems to me that creating opportunities for greater expression of student voices in the learning/teaching enterprise [e.g. in terms of eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities] is closely interwoven with the notion of greater sharing of power between students and teachers in the classroom.

In this regard, I would now like to focus on a recent paper by Gitlin and Hadden (1997: pp. 70-84); firstly, in order to focus on another teacher's research work in the classroom and, secondly, to further address the notion of '*acting on power relations in the classroom*' (Gitlin and Hadden, 1997: p. 73). Hadden, utilizing a political/humanist action

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<sup>1</sup> The six principles are respect, fairness, autonomy, intellectual challenge, social support, and security.

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research approach to educative research<sup>1</sup>, changed her *'pedagogical style (so) that (it) allowed for alternative and less hierarchical relations in the classroom'* (Gitlin and Hadden, 1997: p. 73). While Hadden worked with 11-12 year-old fifth and sixth grade students and examined her teaching in the classroom as part of the power relations in schooling, I worked with 17-18 year old sixth form students (equivalent to the American high school twelfth grade) in the classroom with an initial central focus on improving the students' learning through improving my teaching. I later (especially towards the end of the 1995 study) came more fully to appreciate that through the elicitation/creation, greater enactment, and evaluation of teaching/learning communicative activities with the sixth form students, we were effectively instigating some movement away from authoritarian teacher-student relations in the classroom [pp. 86-89].

It appears that Hadden changed her teaching practice much more radically than I did in using her classroom as a forum to raise questions about power and in involving her students in designing curricula, lesson planning, organising field trips, and responding to her research writing. Admittedly, Hadden was with her students for the whole school day and taught them a variety of subjects whereas each mathematics or chemistry session with my sixth form students lasted for 35-40 minutes. Also, there is a sense, I believe, in which secondary schooling, despite the possibility of building good relationships between students and teachers, structurally nurtures a subject-centred approach to students rather than a student-centred approach to subjects. Nevertheless, like Hadden, I claim to have fostered more democratic relations between the students and me in the classroom during my research projects. Although, perhaps it is true to say that Hadden brought about more change in power relations with her students than I did.

Despite my admiration for the radical nature of Hadden's work and for all of the changes she helped to bring about with her students in the classroom, I have two reservations.

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<sup>1</sup> In a political/humanist approach to action research, politics are moderated by a strong sense of humanism, and the researcher decides if the project is to have a political focus (Gitlin and Hadden, 1997: p. 73).

## Part Two

Firstly, no evidence is supplied to support Hadden's claim that '*student achievement skyrocketed*' (Gitlin and Hadden, 1997: p. 80) during her project. Secondly, while I believe that 'protest' is an important part of the expression of 'voice', I am wary of, what I consider to be a reductionist notion of 'voice as a form of protest', as used by Hadden, as it imports an overly prescriptive stance, in my view, and could possibly lead to a kind of listening and seeing that views the pedagogical as secondary to the political. This is similar to my reflection on Giroux's and McLaren's (1986) critical pedagogy where I see their work as predominantly political and my own work as predominantly pedagogical (page 124). This is not to deny the importance of addressing political, social, cultural and economic constraints that impact on the quality and nature of communication and relationships in classrooms and schools.

**Approaching the conclusion of this chapter, and taking Chapter Five into account, I claim that, in granting my sixth form (17-18 year-old) students a 'limited-franchise' expression of *student voices* through the collaborative elicitation/creation, greater enactment, and evaluation of teaching/learning communicative activities in the classroom, we were engaging in more democratic actions in the classroom and were simultaneously creating more egalitarian power relations between the sixth form students and me during the learning and teaching of chemistry (1994 and 1996 studies) and mathematics (1995 study); I also claim that, accompanying these processes, the majority of the students in each of the 1994/1995/1996 singularity studies significantly improved their learning and their grades in tests.**

In my view, the symbiotic relationship between (i) listening to and acting on 'student voices' in terms of eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities in the classroom and (ii) sharing power between my sixth form students and me is sufficiently evidenced in the above and communicates that living out more democratic actions in the classroom is intimately related to the notion of creating less unequal power relations in the classroom between the sixth form students and me.

## Part Two

### *Responding to Noffke (1997)*

I now wish to debate with some of the arguments informing Noffke's view that 'living educational theory' seems incapable of addressing issues of power and privilege in society (Noffke, 1997: p. 329). In particular, I wish to focus on the issue of power relations.

In relation to 'living educational theory' (Whitehead, 1993), Noffke (1997) states:

*As vital as such a process of self-awareness is to identifying contradictions between one's espoused theories and one's practices, perhaps because of its focus on individual learning it only begins to address the social basis of personal belief systems. While such efforts can further a kind of collective agency (McNiff, 1988), it is a sense of agency built on ideas of society as a collection of autonomous individuals. As such, it seems incapable of addressing social issues in terms of the interconnections between personal identity and the claim of experiential knowledge, as well as power and privilege in society. (Noffke, 1997: p. 329)*

Noffke's statement deserves challenge on a number of issues. Firstly, while there is an emphasis on explaining one's educational development within a living educational theory approach to educational action research, Whitehead acknowledges that Laidlaw

*has helped - to extend the range of - questions of the kind, 'How do I improve my practice?' to embrace the other in questions of the kind, 'How do I help you to improve your learning?' (Laidlaw and Whitehead, 1995: p. 2)*

In this thesis, the focus on my own learning grows from the focus on my students' learning as I respond to the primary question, 'How can I help you to improve your learning?' This activating question with its 'I help you' clearly places social relationship between the students and me rather than merely my own learning, which is also important, at the heart of my research enterprise. I believe Noffke fails to fully appreciate the possibility of the centrality of this social dimension within a living educational theory approach to action research.

## Part Two

Secondly, when Noffke writes about furthering ‘*a kind of collective agency --- a sense of agency built on ideas of society as a collection of autonomous individuals*’ (Noffke, 1997: p. 329) within McNiff’s work, I believe she is profoundly mistaking the nature of McNiff’s work. McNiff states that ‘*Dialogue and the building of dialogical communities must be a primary focus of educational intent*’ (McNiff, 1988: p. 41). To my mind, a dialogical community places much greater emphasis on social relationship than does a collectivity of autonomous individuals which seems to carry an atomistic view of the individual within society. This does not imply that a dialogical community fails to invest in the importance of individual autonomy. Again, it seems to me that Noffke fails to fully appreciate the social dimension within another’s work.

Thirdly, while the individual and society are distinctive [own comment], I believe they are neither fixed entities nor separate domains (Carr, 1995: p. 85). Noffke’s notion of ‘*society as a collection of autonomous individuals*’ seems to infer that the individual and society constitute separate domains.

It appears to me that the above three ‘blind spots’ considerably weaken Noffke’s basis for purporting that living educational theory seems incapable of addressing notions of power in society.

My prior arguments in this chapter and Chapter Five, along with the above criticisms of Noffke’s comments regarding living educational theory, help clear some of the ground in my agreement with Noffke (1997) that:

*the dual agenda of interrogating the meanings of democracy and social justice<sup>1</sup> at the same time as we act to alter the social situation shapes [I prefer ‘helps shape’] the potential of action research.* (Noffke, 1997: p. 334)

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<sup>1</sup> I make a case for more socially just actions in the classroom in Part Three of my thesis.

## Chapter Seven: Reflecting Further on Whose Voices Count

In connection with promoting more democratic actions in the school and the classroom, I have noted earlier that Rudduck has emphasized the importance of listening to 'student voices' in democratising the classroom [pp. 124-131]. I think it is fair to say that, in my singularity studies (1994, 1995, 1996, and 1997), I have shown that I have learned to more fully listen to and act on '*the voices of students and -- give attention to their perspectives on the experience of being a learner in school*' (Rudduck, 1995: p. 11).

Indeed, while hoping to avoid the pitfall of constructing a thesis with an artificial 'victory narrative', I believe my work also constitutes some practical evidence of the aspirations and sentiments expressed in the following quote from Hopkins (1993):

*I believe that it is important for the teacher to involve his or her [students]<sup>1</sup> in the research process as soon as their confidence allows. [Adolescents]<sup>2</sup> provide wonderfully frank and honest feedback, especially when they sense that their opinions are valued and respected, and this can only serve to enhance the quality of life in the classroom.* (Hopkins, 1993: pp. 153-154)

In the above, in terms of implications, I am relating my work to other educational researchers' work, and, although I am touching on points of positive resonance, I believe it also important that I offer (and respond to) reasonable and responsible challenge where appropriate. In this regard, the classroom-based nature of my own educational action research work leads me to question, what I see as, the prescriptive tone of Hopkins's whole-school-approach recommendation when he writes:

*Put simply, then [1985] I believed that to improve schools we needed to improve teachers, to build a community of teacher-researchers. Now [1993] I believe that to sustain the ethic of teacher development we need to anchor our work to a whole school context.* (Hopkins, 1993: p. 219)

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<sup>1</sup> Hopkins (1993: p. 153) wrote '*pupils*'.

<sup>2</sup> Hopkins (loc. cit.) wrote '*Children*'.



## Part Two

I am not opposed to a whole-school approach; what does bother me is that the potentially prescriptive tone of Hopkins's recommendation - '*anchor our work to a whole school context*' - could valorize a whole-school approach to the detriment of believing that an individual teacher with his/her students can make a worthwhile and significant difference to the learning and teaching life in a classroom and that the work of an individual teacher can also make an important contribution to building an international community of teacher-researchers. Perhaps there is some unintentional slippage from *both/and* to *either/or* logic within Hopkins's recommendation above.

Rudduck (1995), in her Presidential Address to the British Educational Research Association, given in September 1994, stated:

*House said 20 years ago (1974) that 'the school is an institution frozen in the order of institutions' (in MacDonald, 1991, p. 11); it is not easy for schools, in the present climate (September 1994), to develop structures that genuinely and regularly consult students about aspects of schooling and that take seriously the question of 'voice' and 'participation'. But we can take some inspiration, I think, from the work of teachers who have been trying to 'unfreeze' their schools and transform the traditional culture through whole-school policies on equal opportunities. (Rudduck, 1995: p. 11)*

In Chapter Six, I have contrasted some of Rudduck's work with my own work (pp. 124-131), one main difference being that Rudduck utilizes a whole-school improvement approach while my own stance to helping my sixth form students to improve their learning is more classroom-based. In addressing the notions of '*frozen*' and '*unfreez(ing)*' in the above, the following poem, which made a deep impression on me when I first read it in December 1996, has a powerful last two lines in my view<sup>1</sup>.

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<sup>1</sup> I have kept this poem to the right of my work table since December 1996 and often return to a reading of the last two lines in particular. Indeed, I found the poem so impactful when I first read it that I gave copies of it to three teaching colleagues in St. John's College and emailed copies to Jack Whitehead and Ben Cunningham in Bath.

## Part Two

### *Voice*<sup>1</sup>

*By Liu Hongbin*

*(translated by Elaine Feinstein)*

*As soon as we leave the tunnel of birth,  
even before our bodies are cleaned of blood  
we all cry out, and those sharp cries  
are the first signs of our talent for speech.  
Later, we escape in many directions, and our voices  
are lamps of fire in the rain, which fly up  
looking for their own light  
as flocks of birds rush through the trees  
or birdsong falls along forest paths.  
That is how our voices mingle with air  
Who can forbid something so natural?*

*World, we must have a talk about this.  
We don't need any language to do it.  
Nature's a womb not a refrigerator,  
Our voices which are spacious as the sky,  
must not be frozen in us or we die.*

I am almost tempted to analytically contest the notion that '*We don't need any language to do it*' but I don't think that is necessary in the present context and it may be an inappropriate response to the poem. It is sufficient to relate that the line sits uncomfortably in my mind and disturbs me somewhat; and yet, I experience a certain release from tension when I think that the line could possibly mean that expression of voice is something which should occur naturally and/or that freedom of expression is more a question of *being* than *saying*; I really don't know the poet's intended meanings for this line. Nonetheless, putting aside my slight discomfort regarding '*We don't need any language to do it*' and connecting more pertinently and concretely to the emancipatory theme of

*Our voices which are spacious as the sky,  
must not be frozen in us or we die,*

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<sup>1</sup> The Independent (London), December 9th, 1996.

## Part Two

it is my belief that the **excerpts below from the eleventh draft of my Abstract (September 11th, 1998)** reflect the central place I wish to give to student voices and to my own voice, a particular teacher's voice, in my enquiry. I am also equally concerned to appropriately include, and not eclipse, the legitimate 'voices' of others (critical friends, key respondents, and researchers in the literature).

*This shift in power relations [between my sixth form students and me] is primarily enacted through providing opportunities for my sixth form students to exercise more 'voice' in their own learning and in my teaching. --- In a related manner, through a process of self-advocacy, I gain in 'voice' regarding the constitution of a significant part of my own knowledge base in teaching. In my educational research I adopt a living educational theory approach to action research, concomitantly conversing with insights from other perspectives which act as challenges and enhancements to my understandings and explanations and help define the distinctiveness of my own approach.*

*Through listening to my sixth form students' suggestions regarding improvements in my teaching in three of the singularity studies (1994, 1995, and 1996), I systematically act on their suggestions with the purpose of helping my students to improve their learning, utilizing feedback from students, critical friends and key respondents to help validate my claims of successfully implementing teaching/learning communicative activities. These communicative activities are elicited in collaboration with my sixth form students as 'imagined solutions' to their perceptions of 'problems' in my teaching. ---*

*Briefly, my thesis is about greater enfranchisement of my students' voices in their own learning and enfranchising my own voice, a teacher's voice, in creating a significant part of my own knowledge base in teaching --- [Abstract Eleven: Data Archive]*

Consistent with the focus on student voices in the above excerpts, I contend that in the three singularity studies (1994, 1995, and 1996) mentioned in Chapters Five and Six, I helped to give greater expression to student voices both (i) in terms of my teaching and educational action research practices and (ii) in terms of my account [pp. 75-135], as the following three overlapping knowledge claims from those chapters will hopefully confirm:

## Part Two

### Claim One (page 81)

**It is my belief that through listening to my students' voices which informed the collaboratively elicited and created teaching/learning communicative activities and through the subsequent successful implementation/enactment of those communicative activities over an eight to ten week period we were engaging in more democratic actions in the classroom.**

### Claim Two (page 96)

**It is my belief that through collaboratively eliciting/creating, enacting more fully and evaluating teaching/learning communicative activities with the sixth form students I have learned to further 'abdicate my position of centrality' in letting 'student voices' through, listening to them, and acting on them appropriately as part of the process of enacting a fundamental positive power shift in the sixth form students' favour. I have also learned to value more fully the organic nature of, and the organic connection between, the human freedom of an individual and the social relationships within the 'society' of the classroom. I therefore claim that I have deepened my understanding of, and have been engaging in, and we - the students and me - have shared in, more democratic actions in the classroom during the 1994, 1995, and 1996 singularity studies.**

### Claim Three (page 133)

**I claim that, in granting my sixth form students a 'limited-franchise' expression of *student voices* through the collaborative elicitation/creation, greater enactment, and evaluation of teaching/learning communicative activities in the classroom, we were engaging in more democratic actions in the classroom and were simultaneously creating more egalitarian power relations between the sixth form students and me during the learning and teaching of chemistry (1994 and 1996 studies) and mathematics (1995 study); I also claim that, accompanying these processes, the majority of students in each of the 1994/1995/1996 singularity studies significantly improved their learning and their grades in tests.**

**Firstly**, in relation to the above three claims to knowledge, it is worth stressing that '*student voices*' occurs in each of the three claims.

**Secondly**, the first claim, which helps to establish the central importance of '*teaching/learning communicative activities*' in my theory construction, is contained within each of the following two claims. Additionally, a significant part of the second

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claim is contained within the third claim; the following is the part of my second claim that is *not* included in my third claim - I'll call this part **the complement of my third claim**:

**I have learned to further 'abdicate my position of centrality' in letting 'student voices' through, listening to them, and acting on them appropriately (as part of the process of enacting a fundamental positive power shift in the sixth form students' favour). I have also learned to value more fully the organic nature of, and the organic connection between, the human freedom of an individual and the social relationships within the 'society' of the classroom. (I therefore claim that) I have deepened my understanding of (enacting) more democratic actions in the classroom during the 1994, 1995, and 1996 singularity studies.**

Therefore, **Claim Three** (page 140) and **the complement of my third claim** (above) constitute a statement of my central claims to knowledge for Chapters Five and Six of my thesis (pp. 75-135).

**Thirdly**, in connection with the important issue of the developmental nature of my theory construction, which utilizes 'Voice' as a key metaphor among other metaphors and themes, it is interesting to note that Winter (1998) has stated:

*What I also want to suggest ----- is that the phrase 'developing a theoretical interpretation' is a better indication of what we need to do within an action research inquiry than, for example, the phrase 'linking practice to theory'<sup>1</sup>. I think there is a danger in the latter phrase in that it makes the term 'theory' sound as though it could be simply a body of existing published literature which provide us with an external interpretative framework. This way of thinking would take us back to the conventional social science approach to inquiry, in which the first step is to 'review' the literature' and establish a 'gap' in it. --- I would like to see action research as a process through which practitioners create theory (rather than use it<sup>2</sup>) as they engage in the on-going critical debate about the meaning of experience through which bodies of knowledge are continuously changing. (Winter, 1998: pp. 66-67)*

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<sup>1</sup> I have added the bold type for emphasis.

<sup>2</sup> This may be an unintentional slippage into *either/or* logic on Winter's behalf. It is my belief that theoretical insights from others can be 'used' in action research in the sense that these insights can be integrated into my theory construction as an educational action researcher (Whitehead, 1993: p. 57).

## Part Two

I believe the notion of '*developing a theoretical interpretation*' has a high positive resonance with my own approach to theorising in Part Two of my thesis (see, for example, pp. 75-76; pp. 122-123). In fact, chapters from Parts Two, Three, and Four of my thesis were originally included in a lengthy 'Development of Theory Chapter'. Also, in relation to my own stance towards practice and theory, as far back as June 1994 I have written:

*I believe that theory and practice are not totally separate and that in communication each can permeate and generate the other.* (Singularity Study One: p. 51)

In June 1996, I wrote the following:

*I believe that practice and theory are intimately related and that in communication each can help shape the other.* (Singularity Study One: p. 51)

So, it seems that in Part Two I provide a particular theory-construction exemplar of the kind of theorising that Winter, in a recent paper (Winter, 1998: pp. 53-68), says is needed in an action research enquiry.

In mentioning Winter's paper I am merely using a recent paper to help me 'read the signs of the times' in theory construction in educational action research<sup>1</sup>. To me, Winter's paper helps confirm that I am one among many others<sup>2</sup> showing, not without opposition<sup>3</sup>, a new form of theorising to the academy.

**Fourthly**, returning more centrally to the notion of whose voices count and extending my interest to poetic metaphors in general, it is relevant in the present context, I believe, to connect to a poetic form of representation mentioned earlier (page 138) and in particular to the notion of 'Voice' as poeticised in:

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<sup>1</sup> Nor do I view my mention of Winter's paper (Winter, 1998: pp. 53-68) as '*genuflection*' (Bassey, 1995: p. 77) but rather as a form of triangulation between my work and Winter's paper in relation to the discernment of the nature of theory construction in educational action research.

<sup>2</sup> For example, there is significant international interest in action research.

<sup>3</sup> See, for example, last main paragraph of page 40.

## Part Two

*Our voices which are spacious as the sky,  
must not be frozen in us or we die.*

While acknowledging that '*Our*' is both complex and problematic<sup>1</sup> when referring to my students and me (as a teacher), I cannot deny that these two lines of poetry stir within me a feeling of gentle compassion for myself as a teacher and a feeling of gentle compassion for my students (and, indeed, a feeling of gentle compassion for us as human beings). My *felt-reaction* is that I want my voice to be heard and I want my students' voices to be heard. Indeed, Giroux's and McLaren's 'definition' of 'Voice' reported earlier [page 123] is highly congruent with this democratic and democratising impulse to let a teacher's voice and students' voices be heard.

Continuing with my *felt-reaction* to the above two lines of poetry<sup>2</sup>, I do not want the students and me to feel dead in the classroom (or in educational research literature) when we are, in fact, supposed to be alive. I want our voices to appropriately and responsibly gain expression and not to be oppressively silenced by me or others. But there is a further important point. Because of the very real differences in power relations between my students and me, I feel a high degree of responsibility to help facilitate my students' expression of voice and, because of this feeling, I am inclined to move into a space of self-forgetfulness for the sake of my students<sup>3</sup>. In this movement I discern what I believe is a particular expression of the rule of love and of the logic of superabundance<sup>4</sup> that is sometimes possible in my human heart and actions and that I believe is at the heart of my desire to be a teacher and to continue to be a teacher.

---

<sup>1</sup> I am thinking of a network of relationships within the classroom with multiple and varying levels of tension and ease.

<sup>2</sup> As already noted, this couplet has impacted on my consciousness at a *feeling level* since December 1996; however, this is my first time (September 1998) articulating my *felt-reaction* to the two lines of poetry.

<sup>3</sup> Implicit in my argument here is that the above two lines of poetry have influenced me in a tacit manner during my 1997 singularity study and in the later writings for my thesis and that in the present articulation of my *felt-reaction* to the couplet there is a sense in which my knowledge of some of my felt commitment (or motivation) in helping my students' voices and my own voice to be 'heard' is evolving from an arena of '*practical consciousness*' into an arena of '*discursive consciousness*' [Footnote 2, page 23].

<sup>4</sup> A term I have borrowed from Ricoeur (1991: pp. 23-39) and discussed in more detail in Chapter Eight.

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**My final and fifth point**, in this first section of Chapter Seven, connects to the notions of ‘expert witness’, ‘limited franchise’ [page 125 and page 131], and to the notion of ‘student voices’ informing and helping to form ‘teaching/learning communicative activities’ whose elicitation/creation, greater enactment, and evaluation helped to bring about greater power sharing between my sixth form students and me.

In terms of implications of my work connected to the above, I have distinguished between my work and the work of Rudduck, Chaplain, and Wallace (1996), Giroux and McLaren (1986), and Polan (1989) and, despite the fact that there is a strong common democratic and democratising impulse informing and forming these educational researchers’ work and my own educational action research, I believe it is worth stressing the distinctiveness and the complementariness of our work (pp. 123-131). I also believe it is important that this distinctiveness and complementariness gain public expression in the literature, thereby providing more of a ‘rounded’ view of what the world of education is, and could be, like. A connected central argument here is that I contend that my educational action research work has an original contribution to make to educational research in terms of a practical expression of ‘student voices’ embodied in the elicitation/creation, greater enactment, and evaluation of ‘teaching/learning communicative activities’ which, in terms of practical outcomes, helped the majority of my sixth form (17-18 year-old) students involved in the 1994, 1995, and 1996 singularity studies to improve their learning and their grades in tests.

In the next section of Chapter Seven [pp. 145-156], I connect more fully to the notion of a poetic form of representation mentioned earlier [pp. 142-143]. In this way, I tease out an important part of my own voice, but also show that textual and social encounters [as well as practical action] are central to my theorising in my action research [page 122].



## Part Two

### *My Use of Metaphor as a Means of Expression and a Way of Understanding*

When I choose to speak/write about living out my educational values more fully in my practice in this thesis, I am concerned to keep in mind the connection between the ‘What’ that is spoken/written (an important part of which is focused on actions - values lived out more fully in my practice), and the ‘Who’ of the speaker/writer/practitioner.

Epistemologically, this kind of ‘Who’/‘What’ remembering is also one way of not forgetting the very important connection, as I see it, between a knower and a knower’s claims to knowledge. The following poem, in my view, resonates with these sentiments.

#### *A What Without A Who*

*Once upon human time  
During a heated conversation  
Among the word weary world weary  
All of the words evaporated  
And became a cloud of knowing  
Which eventually rained liquid language  
Into River Mellifluous*

*And my surprise  
In the dumb deep silence  
Was the great number of people  
Who mistook the river  
For the whole world.*

*James Finnegan, January 1997.*

For me, the connection between the ‘Who’ of the speaker/writer/practitioner and the ‘What’ of the spoken/written/actions in educational action research can be admirably maintained and sufficiently sustained through the metaphor of ‘Voice’. ‘Voice’, for me, conjures up firstly the notion of the human voice (which I fully appreciate can also be legitimately silent or unjustly silenced). From this notion flows the notions of (i) a human being speaking (‘Who’ emphasis) and (ii) something being spoken (‘What’ emphasis) by a human being.

## Part Two

Eisner uses the phrase '*form of representation*' to refer to '*the expressive medium used to make a conception public*' (Eisner, 1996: p. 45). In this thesis, writing is the main form of representation<sup>1</sup> that I use to communicate my meanings, and within my writing I predominantly use prose. However, in the form of poetic metaphors *within* my prose and also in the form of poetic verse, I sometimes employ poetic expression in my meaning making. Indeed, poetry and prose can be regarded as particular forms of representation in their own right.

Regarding '*modes of treatment*' of forms of representation, Eisner (1996: p. 48) states that '*Any form of representation (for example, literature and poetry) can be treated in one or more of three modes: mimetic, expressive<sup>2</sup>, and conventional*'. The mimetic mode imitates surface features (Eisner, 1996: p. 48): for example, the word 'hiss' sounds like the hiss of a snake (auditory) ; the curved line on the road sign looks like the curves on the road (visual). The expressive mode refers to the portrayal of the '*deep structure*' of an object, event (Eisner, 1996: p. 52), attitude, or situation<sup>3</sup>. The conventional mode refers to the standardized use of language and symbols (Eisner, 1996: p. 55): 'The cup of coffee is on the table' has an agreed meaning for those who speak English; ? is a question mark.

At this juncture, it is the expressive mode of treatment of a poetic form of representation that is of most relevance in the present discussion and that consequently requires some exposition. Eisner (1996) notes:

*By expressive, I mean that what is represented is not the surface features of the object or event, but, rather, its deep structure or, in other words, its expressive character. --- Here, too, a kind of imitation is at work [as in the mimetic mode of treatment of form], but it is not imitation of things seen. Rather, it is an imitation of things felt<sup>4,5</sup>. (Eisner, 1996: pp. 52-53)*

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<sup>1</sup> I also use some mathematics in the form of statistics [e.g. student mean-value ratings (that is, the sixth form students gave the ratings) for disimprovement/improvement in teaching/learning communicative activities].

<sup>2</sup> This '*expressive*' has a different meaning to '*expressive*' in '*expressive medium*' above.

<sup>3</sup> Eisner (1996: p. 52) includes '*object*' and '*event*'. I have added '*attitude*' and '*situation*'.

<sup>4</sup> The bold type is my own.

## Part Two

It is worth noting that Eisner (1996: p. 52) also uses the phrase '*essential properties*' when explaining the meaning of '*deep structure*'. Philosophically, in the context of my singularity studies I will avoid this phrase and instead will think of '*deep structure*' as relating to contextual depth properties. It may be redundant to state that I do not deny that such contextual depth properties can have generalisable significance<sup>1</sup>.

In connection with my work, it is now<sup>2</sup> my retrospective understanding and my present contention that, within the 'valley metaphor' (page 75) and within the '*Voice*' and '*A What Without A Who*' poems (page 138 and page 145), the most significant meanings are conveyed primarily through the expressive mode of treatment of these particular poetic forms of representation. The following indicate some of the '*deep structure*' content that I hope gain appropriate expression in my communications relating to the above three poetic pieces of writing<sup>3</sup>:

### *Valley Metaphor*

It is intended that my 'valley metaphor' communicates that

*it is (not) a case of theory from the ground up meeting theory from the top down, rather, in releasing myself from the net of hierarchy cast by 'ground up' and 'top down', is it a case of appreciating the picturing function of (my valley) metaphor as a means to understanding my response to the question 'How do I theorise?' [page 75]*

as a response proffering a non-hierarchical and intimate relationship between practice and theory.

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<sup>5</sup> Eisner (1996: p. 53) argues that '*much of what is most important in human experience is not what is apparent, but, instead, what is felt about what is apparent*' and continues thus: '*Things are not always what they appear to be on the surface. They need to be seen in terms of the kind of emotional life that they generate. The sense of curiosity displayed by a very young child exploring a new toy or the fear of an old man anticipating imminent death are not simply physical movements. Such configurations possess a pervasive quality that conveys to the sensitive perceiver the character of curiosity and fear.*'

<sup>1</sup> I am borrowing the phrase 'generalisable significance' from Giddens (1991: p. 206).

<sup>2</sup> Wednesday, September 23rd, 1998.

<sup>3</sup> As noted earlier (page 138), '*Voice*' was written by Liu Hongbin and translated by Elaine Feinstein.

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As part of an aesthetic response on the reader's behalf, I believe it is important that the reader enter the 'picture' of the v-shaped valley thereby experiencing in her/his imagination that the two sides of the valley are connected (*'intimate relationship'*) and that neither side of the valley is higher than the other (*'non-hierarchical -- relationship'*).

### *A What Without A Who*

One of the key notions that I had in mind when writing this poem (page 145) on Sunday, January 5th, 1997 was in *'the dumb deep silence'* to decry the way in which language spoken and written by people can sometimes become, inappropriately in my view, *totally detached* from those people and their contexts and treated as an entity in itself. The poem was also written as a *felt-reaction* to some of my late 1996 readings around structuralist approaches to language. For example, Kearney (1994), writing on structuralism<sup>1</sup>, notes:

*Words, as the discourse of the so-called 'transcendental subject' of man (sic), are now seen to be no more than the external workings of the system of language. Otherwise stated, words refer neither to things, nor to representations of things, nor indeed to the self-representation of the human subject. They refer quite simply to words themselves. Perhaps the most epoch-making discovery of structuralism is that language speaks itself. This appearance of language coincides with the disappearance of man (sic). In the contemporary episteme of the structural age, the individual discourse of the human subject (parole) is dissolved into the more anonymous codes of language itself (langue)* [Kearney, 1994: p. 290].

More pertinently, earlier [page 145], I have referred to two important kinds of *deep-structure* 'Who'/'What' connections that I believe are necessary to keep in mind when reading my work, (i) the connection between the 'What' that is spoken/written and the 'Who' of the speaker/writer/practitioner, and (ii) the connection between the 'Who' of the knower and the 'What' of the claims to knowledge.

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<sup>1</sup> Specifically, in relation to Saussure (1857-1913) and the early Foucault (1926-1984).

## Part Two

### *Voice*

Although the poem 'Voice' (page 138) was written by Liu Hongbin (and not by me) and translated by Elaine Feinstein, my own readings continually draw me to:

*Our voices which are spacious as the sky,  
must not be frozen in us or we die*<sup>1</sup>.

I have already communicated [page 143] some of the '*deep structure*' content of my *felt-reaction* to the above two lines of poetry.

The above communicates a fuller epistemological justification for my utilization of a poetic form of representation in my theory construction, specifically, in relation to my understandings of the expressive mode of treatment of poetic forms of representations within my 'valley metaphor' and the two poems, '*A What Without A Who*' and '*Voice*'.

This poetic dimension to my meaning-making, in my view, constitutes some practical evidence<sup>2</sup> of my openness to different ways of understanding. Also, in terms of implications, my utilisation of poetic expression in an educational action research thesis may help bolster the position of personal poetic understandings as a valid point of triangulation in educational research, both methodologically and epistemologically.

### *Importing a Challenge from Eisner*

At this stage I wish to import, and respond to, the following challenge from Eisner (1997) to my above poetic meaning-making: Eisner (1997) claims that

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<sup>1</sup> See Footnote 1, page 137.

<sup>2</sup> I consider my writing to be a central part of my practice for this thesis.

## Part Two

*'many alternative forms of data representation do not provide [the] kind of precision' [demanded by] 'conventional social science' [and cautions that] 'One peril of ambiguity is the Rorschach syndrome: Everyone confers his or her own idiosyncratic meaning to the data'.* (Eisner, 1997: pp. 8-9)

Firstly, I concur with Bassey's definition of educational research as

*'systematic, critical, and self-critical enquiry (made public which) aims critically to inform educational judgements and decisions in order to improve educational actions'* (Bassey, 1995: p. 2 and p. 39).

As Bassey (1995: pp. 38-46) distinguishes between educational research and sociological, psychological, historical, philosophical, and economic research in educational settings<sup>1</sup>, I believe his definition of educational research is open to the notion that both the social sciences and the humanities can be called upon when making meaning in educational action research which, according to Bassey (1995: p. 46), can be regarded as a subset of educational research<sup>2</sup>. My first point, therefore, is that both the social sciences and the humanities can be called upon when making meaning in educational action research and that conventional social science is *not* the only knowledge resource to be drawn upon when making sense of data in educational research enquiries.

My second point follows from my first: if both the social sciences and the humanities can be called upon when making meaning in educational action research and if conventional social science is *not* the only knowledge resource to be drawn upon when making sense of data in educational research enquiries, then it is no contradiction, in my view, to claim that the kind of precision demanded by conventional social science - for example, the kind of precision that is explicitly embodied in terms like 'reliability' and 'replication' - is inappropriate, in my view, for studies of singularities where terms like 'credibility' and 'transferability' (Lincoln and Guba, 1985: pp. 289-298) are, I believe, more meaningful in helping to establish the trustworthiness of claims to knowledge. Therefore, regarding my

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<sup>1</sup> This distinction is similar to Elliott's distinction between educational theory and theories about education (Elliott, 1989: p. 84).

<sup>2</sup> Admittedly, Bassey (1995: p. vii) views *'educational research as a free-standing member of the social sciences'*. However, I contend that Bassey's definition of educational research is more 'open' than this.

## Part Two

own work, it is my belief that different *kinds* of standards of judgement to that of the conventional social scientific ‘precision’<sup>1</sup> described above are needed to help validate my claims which draw upon metaphor and poetry as two resources among many other resources when I am making meaning in my educational action research enquiry.

Thirdly, in responding to Eisner’s warning that

*‘One peril of ambiguity is the Rorschach syndrome’* where everyone *‘confers his or her own idiosyncratic meaning to the data’* (Eisner, 1997: p. 9),

I believe it is important to bear in mind that I am responding to this particular challenge in the context of my utilization of poetic forms of representation as described and explained above (145-149).

Interestingly, Eisner (1997: p. 9) identifies ambiguity *‘as a potential source of insight, a way of keeping the door open for fresh insights<sup>2</sup> and multiple interpretations’*. In this connection, it seems to me that it is in the nature of metaphor and poetry to keep *‘the door open for fresh insights and multiple interpretations’* and yet have specific meanings proffered to the reader by the writer who may be the originator and/or interpreter of the poem or metaphor. However, there is a further dimension to my work in that I am willing to enter into dialogue with a reader of my thesis and am also open to allowing that particular reader help shape my poetic forms of representation in my thesis.

For example, regarding my ‘valley metaphor’, the following dialogic email communications between Pat D’Arcy and myself after Pat had given me feedback on my thesis on Thursday, June 25th, 1998, indicate, in my view, my openness to integrating, through social encounters, fresh insights from another educational researcher into my metaphorical and poetic understandings of my work.

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<sup>1</sup> It may be redundant to state that I do not dispense with precision in writing this thesis where I believe I make an assiduous attempt to state precisely what I mean.

<sup>2</sup> I use bold type here because these same words are used by Pat D’Arcy in an email ahead [page 153].

## Part Two

### Email from James Finnegan to Pat D'Arcy (July 1st, 1998)

*Dear Pat, I was thinking some more about the importance of the metaphor below for my development of theory in my thesis. I feel you have a deep appreciation of its picturing function, Pat. However, it seems to me that for you (and me!) the last sentence of the metaphor 'disrupts' the first inner picture that a reader might construct (Was that your experience/response as a reader?). But maybe such a 'disruption' can become part of the metaphorical explanation for the non-hierarchical and intimate relationship between practice and theory as these help form and inform present and future teaching and research practice after the thesis is written? Any comments!?:*

*An important metaphor has been with me since early January (1998). — [page 75] --- Eventually the two sides of the valley will merge into one and become the ground (a new first field) from which and through which my future teaching and research practice will grow. Warm regards, James.*

### Email from Pat D'Arcy (July 7th, 1998)

*Dear James, — Since we [Pat and husband] came back from the mountains and valleys of mid-Wales I've been thinking about your central metaphor again, especially after reading your e-mail. You're right about the visually disruptive effect, for me at any rate, of suggesting that 'Eventually the two sides of the valley will merge into one' and I'm quite lost when you suggest that 'maybe such a disruption can become part of the metaphorical explanation for the non-hierarchical and intimate relationship between practice and theory...' <sup>1</sup>*

*You see, I don't want to relinquish my internal vision of this valley with the four 'singular' and varied fields through which you have travelled on the one slope and the vast field (or maybe forest???) on the further slope (partly in shadow) which signifies all the theory upon which you then draw. In my mind, I then imagine the valley opening out into a much wider and more spacious landscape (ie. wherever in life your research leads you next) - a vista which is only revealed once both sides of the valley which represents the past and the present, have been explored. It is what they offer in RELATIONSHIP to each other that enables the way to open up at the head of the valley - but I don't want to think of them, metaphorically, as merging into one.*

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<sup>1</sup> I could have explained this part of my email more clearly to Pat on July 1st, 1998. My present understanding (September 29th, 1998) of this section of my July 1st 1998 email is that there is a picturing function also operative within 'Eventually the two sides of the valley will merge into one and become the ground (a new first field) from which and through which my future teaching and research practice will grow' but that its picturing function is more surreal than the picturing function within the remainder of the metaphor. Another aspect is that the 'disruption' reminds both the reader and myself that it is a metaphor that is being constructed, thereby lessening the possibility of succumbing to poetic trance and any unnecessary dulling of critical awareness.



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*I know that I am here playing around with my personal interpretation which may not chime with yours but as you know, I love the power that metaphor has to offer fresh insights [see page 151] and so I thought you'd enjoy this without having to accept it in any way! ---*

*Warm regards, Pat*

### **My email reply to Pat D'Arcy (July 7th, 1998)**

*Dear Pat, I enjoyed your letter and, in particular, I really like your idea of:*

*the valley opening out into a much wider and more spacious landscape — It is what they offer in RELATIONSHIP to each other that enables the way to open up at the head of the valley.*

*On a couple of occasions I have pictured moving out of the valley to keep the picturing aspect 'consistent' but opted for 'merging' to help keep me 'grounded' — I may create a both/and dynamic between my 'merging' idea and your metaphor-picture above.*

*Warm regards, James.*

So, today, September 28th, 1998, I am creating 'a both/and dynamic between my 'merging' idea and (Pat's) metaphor-picture above'. I am therefore extending my valley metaphor to include

(i) my original idea that 'Eventually the two sides of the valley will merge into one and become the ground (a new first field) from which and through which my future teaching and research practice will grow' and

(ii) Pat's insight: 'In my mind, I then imagine the valley opening out into a much wider and more spacious landscape (ie. wherever in life your research leads you next) - a vista which is only revealed once both sides of the valley which represents the past and the present, have been explored. It is what they offer in RELATIONSHIP to each other that enables the way to open up at the head of the valley'<sup>1</sup>

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<sup>1</sup> In truth, I find Pat's 'scenario' much more poetic and powerful than my own 'scenario', and I particularly like the idea that it is what 'both sides of the valley — offer in RELATIONSHIP to each other

## Part Two

Both (i) and (ii), to my mind, make a metaphorical contribution to meaning making, the picturing function in (i) perhaps being experienced by a reader as more surreal than that in (ii).

Nonetheless, the important point to appreciate is that the above example constitutes evidence that I am willing to enter into dialogue with a reader of my thesis and am also open to allowing that particular reader shape my poetic forms of representation in my thesis.

Therefore, whilst I attempt to authentically share some of my own 'deep structure' metaphorical and poetic meanings with *any* reader of my thesis and fully accept that reader's capacity and right to construct her/his own interpretations of what I say and write, the above is illustrative of my capacity to move beyond such a stance and enter more deeply into dialogue with a particular reader of my work<sup>1</sup>. Additionally, I believe it is also eminently possible that a reader can accept the credibility of my interpretations and yet hold onto her/his unique reading of what I say and write, whether or not I integrate some of the reader's responses into my writing. More pertinently, possibly every reader may confer '*his or her own idiosyncratic meaning to the data*' (Eisner, 1997: p. 9) [page 150], but what is really crucial, in terms of getting my work accepted in the academy, is the perceived credibility of my claims to knowledge. Therefore, while I think it is important that there is divergence rather than a reduction of all interpretations to sameness, I believe that the clearer I am about the criteria I use in the explanations within my accounts and the clearer I am about the standards of judgement [pp. 45-56] by which I wish the trustworthiness of my claims to knowledge to be judged by myself and others, the greater will be the credibility of my work and the less divergent will be the range of

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*that enables the way to open up at the head of the valley*': but I retain my own original 'ending' of the valley metaphor (which is a new beginning) because of its emphasis on 'ground' and also because of its possible 'disruptive' aspect and potential reduction of any poetic trance (Footnote 1, page 152) which could arise in the first inner picture that a reader might construct.

<sup>1</sup> There is further support for this statement in the fact that in response to feedback on my thesis from Pat D'Arcy in February 2000, I significantly re-structured the contents of my thesis to make my meanings clearer to the reader.

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idiosyncratic meanings attached to my data by readers. [This completes my response to the challenge I imported from Eisner (1997: pp. 8-9) on pp. 149-150]

There are two other points worth noting, in my view, in relation to understanding poetic forms of representation more fully.

Firstly, Eisner (1996) notes that

*The expressive mode of treatment is --- not simply a pleasant affectation, a dressing up of content to make it more palatable: it is itself part and parcel of the content of the form of representation.* (Eisner, 1996: p. 53)

Secondly, perhaps there is also a sense in which poetry can bring people beyond the realm of language (whilst not forgetting the metaphorical and narrative resources of language).

Eisner (1997), in considering '*Alternative Forms of Data Representation*', notes:

*In addition to stories, pictures, diagrams, maps, and theater, we use demonstrations, often unencumbered by<sup>1</sup> language, to show to others how something is done. And, perhaps above all, we have poetry, that linguistic achievement whose meanings are paradoxically non-linguistic: poetry was invented to say what words can never say. Poetry transcends the limits of language and evokes what cannot be articulated.* (Eisner, 1997: p. 5)

It seems to me that Footnote 3, page 143, concurs with Eisner's view that poetry evokes what cannot be articulated; more specifically, the two lines of Liu Hongbin's poem 'Voice',

*Our voices which are spacious as the sky,  
must not be frozen in us or we die,*

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<sup>1</sup> I would prefer the phrase 'without' to 'unencumbered by' because I consider language to be a wonderful gift, given and acquired by human beings. I think Eisner's 'unencumbered by' hints at Eisner's strong opposition as an artist to the reduction of meaning making in language to that of propositional language (Eisner, 1996: p. 32).

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evoked a kind of attitudinal *felt* tacit knowledge in me [page 143]. Thus concludes my fuller explanation of my utilization of a poetic form of representation in my theory construction.

In this second section of Chapter Seven [pp. 145-156] I have shown that (i) metaphor, as a means of expression and a way of understanding, is an important part of my own voice, and that (ii) both textual and social encounters [as well as practical action] contribute to the dynamic way in which I express my own voice when creating my own educational theory in my action research.

## Chapter Eight: Making a Case for More Socially Just Actions in the Classroom

In making a case for more socially just actions in the classroom, I will firstly look at ways in which I believe I have acted in a more socially just manner in the classroom during the four singularity studies, taking them in chronological order. I will also look at some of the sixth form students' grades in tests and self-ratings for learning, because I see these as indicators of improved learning. Secondly, I will show how some readings have enhanced my understandings regarding justice. Thirdly, I will refer to other literature in order to look at other understandings regarding social justice and, in particular, to further tease out the distinctiveness of my own developing understandings.

### 1. My Own Activity in the Singularity Studies

#### Singularity Study One (1994)

The following excerpt from my first singularity study (Singularity Study One: pp. 2-3) demonstrates my inclination to cater for students with the poorest chemistry results.

##### *What was my concern?*

*It wasn't difficult to choose this particular group of 21 sixth form chemistry students for the enquiry as ten of the students failed a chemistry test given on November 9th, 1993 (six got honours and five passed), the test being based on work done since September 1993. In the Trial Leaving Certificate examination given in mid-February 1994 (based on the whole course) the same ten students along with three others failed chemistry (four students obtaining honours and four students passing). On Thursday, June 16th, 1994, these twenty-one students sat the physics and chemistry test in their Leaving Certificate. It was a combined paper and counts as one subject. I was responsible for teaching the chemistry side of this course.*

*In mid-February I was quite concerned about this class. Ten of the thirteen who failed chemistry had also failed physics in the trial leaving certificate examination. I genuinely felt that some major change was needed.*

### Part Three

#### *Why was I concerned?*

*Some of the main reasons why I was concerned were:*

- I felt some of the students were poorly motivated and not working sufficiently hard. Eighteen of the twenty-one students had obtained an honour in their junior certificate examination in science, admittedly a combination of chemistry, biology, physics and applied science, but only four students out of the group of twenty-one students obtained an honour in the mid-February Trial Leaving Certificate chemistry test; it seemed a significant number of the students were underachieving.*
- I wanted the students to invest more time and energy in chemistry.*
- I wanted the students to experience more success in learning, both from the point of view of retaining learning and from the point of view of achieving higher scores in their chemistry tests.*
- It was my belief that, among all the students that I taught in 1993/1994, this chemistry group was in most need of some extra help from me; to my mind, there is an issue of social justice here.*

The following excerpt (Singularity Study One: page 22) further illustrates the centrality of my belief in *exercising a preferential option for the most 'disadvantaged'*<sup>1</sup> as a guide to action in the classroom.

- It seems that in practice my preferential option in this mixed ability group of 21 students was for the 'advantaged' - those students with better results [the opposite of what I valued; in this way I experienced a living contradiction element in my teaching (Whitehead, 1993: p. 56)] - in that five out of eight of the students who had obtained a pass or an honour were satisfied with my teaching in chemistry whereas only three out of the thirteen students who had failed the chemistry test in mid-February were satisfied with my chemistry teaching.*

*Possible ways of negating my negation of (or of overcoming my denial of) exercising a preferential option for students with poorer chemistry results and levels of interest were clarified further for me by reflecting on the responses of sixteen students to Q.16, 'What Changes Would You Find Helpful In The Way In Which Chemistry Is Taught?'*

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<sup>1</sup> The notion of 'exercising a preferential option for the poor' has been part of my consciousness (and sometimes, my actions) for at least the last twenty years from a limited contact with South American liberation theology.

### Part Three

#### *Imagined Solutions*

- (1) *Check each individual's Homework (see that an attempt was made)* ----- CH
- (2) *use the Students' Solutions to the homework* ----- SS
- (3) *Invite Questions from the students* ----- IQ
- (4) *give Written Homework for the next day* ----- WH
- (5) *Use the Book more* ----- UB
- (6) *Go more Slowly* ----- GS
- (7) *Explain more Clearly* ----- EC
- (8) *Check students' Understanding* ----- CU

*In relation to my claim that I was acting in a more socially just manner in more fully enacting a preferential option for the 'disadvantaged' chemistry students (in terms of results and interest), it is important to state that all of the teaching/learning communicative activities apart from SS and CU had a creation input from a student who failed the chemistry test in mid-February. [Appendices (pp. 302-307)]*

Table S5.1 (page 104) points to the positive change in the sixth form students' satisfaction ratings with my teaching between March 1994 and May 1994 (8 out of 21 affirmatives changed to 19 out of 21 affirmatives). Additionally, it can be seen from the Appendices (page 324) that nine out of the thirteen students (the 'disadvantaged' students) who failed their physics and chemistry combined test in February 1994 significantly improved their grades in the Leaving Certificate in June 1994 with two of the thirteen students honouring, five students passing, and six students failing. Point 3 on page 103 also constitutes some evidence of improved student learning [These are examples of the sixth form students' self-ratings for learning mentioned on page 319 of the Appendices: see also Appendices (page 316)].

I have shown that student performance improved and my point here is that there are links between enacting more socially just actions in the classroom and enhancing student learning in the classroom; and, as I believe that justice can oftentimes work through democracy, the complexity of explaining the nature of such links has been partly addressed in Chapter Five (pp. 96-120) <sup>1</sup>.

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<sup>1</sup> Here, it may be worthwhile reminding the reader of the cumulative nature of my theory-construction in my thesis.

### Part Three

On two occasions (Singularity Study One: page 38), in attempting to help students with poorer results in the first singularity study, I utilized groupwork in a special way: once in the classroom and once in the laboratory, groups were organised so that students with better February chemistry results were working with those students who had obtained poorer results (thirteen students). My thinking on this, without wishing to permanently lock any student into a failing mode, was that the students with better results might be able to help those students with poorer results. Ten out of the thirteen students found the classroom groupwork worthwhile while all thirteen students found the laboratory groupwork useful. [There is reflective feedback in the Appendices (pp. 310-313) from two critical friends, Joe English and Paraig O' Dowd, on on-task/off-task student activities for the classroom and laboratory respectively.]

An **excerpt** from an **audiotaped conversation** with a key respondent in November 1994 seems to confirm that I was attempting to exercise a preferential option for the students with poorer results and lower levels of interest during the first singularity study (Singularity Study One: page 47).

*Billy Ward, a friend and Deputy Principal in another school, opined (November 1994):*

*I think your study shows that you were trying to be fair to the weaker student, as much to the gifted student. In fact I think you seem to have been, not in any way badly in this sense, but you seem to be more concerned about the weaker student.*

### Singularity Study Two (1995)

The issues of exercising a preferential option for the 'disadvantaged' (in terms of results) didn't arise for me in this study. Although it is true that only 3 students out of 23 students obtained an honour (with 8 students passing and 12 students failing) in higher level mathematics in the Trial Leaving Certificate examination in February 1995 and that 16 students out of 23 students obtained an honour (with 6 students passing and only one student failing) in the Leaving Certificate examination in higher level mathematics in June 1995 [table S2.12 (page 110)], the high failure rate in mathematics in February was not



### Part Three

one of my reasons for becoming involved in the 1995 project which began officially on January 12th, 1995. This is not to imply that the issue of justice did not arise during the second study. It is my belief that in collaboratively eliciting/creating, enacting more fully, and evaluating (through feedback sheets, dialogue, and student ratings) teaching/learning communicative activities in the classroom, there is a sense<sup>1</sup> in which, through acting more democratically, I was also being fairer to the students in engaging in more power sharing and in allowing their voices to come through some more in the learning/teaching nexus. However, paradoxically, in focusing so much on what I was doing (teaching/learning communicative activities), there is also a sense in which I was inadvertently doing my sixth form students an injustice in not focusing sufficiently on their learning in a specific content area of mathematics, a limitation I attempted to rectify somewhat in my third singularity study, where along with focusing on teaching/learning communicative activities I also focused more overtly on the sixth form students' learning in a specific area of chemistry (electrolysis).

Finally, I believe the seriousness of my commitment to involve more sixth form students in dialogue and my efforts to be potentially fairer to Ronan during the 1995 singularity study are aptly captured by **Excerpt Two** [page 85].

#### Singularity Study Three (1996)

In the 1996 singularity study, in a similar fashion to the 1994 study, I consciously worked with sixth form students who had obtained the poorest results in tests, thereby enacting a preferential option for the most 'disadvantaged' students (regarding results) as illustrated in the following excerpt (Singularity Study Three: pp. 57-58):

*Regarding justice, in my third singularity study I worked with students who had obtained the poorest summer 1995 results of all of the groups I was teaching at the time.*

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<sup>1</sup> That is, in the sense of 'justice as fairness' (Rawls, 1971: pp. 3-22) working through more democratic actions.

### Part Three

*In their fifth form summer examinations (1995) eight students out of the eleven students failed the pure chemistry test, six of these students scoring less than 30%. One student passed and two students got an honour.*

*In relation to the sixth form 1995/1996 chemistry students' results, I wrote the following in my Journal on August 19th, 1996:*

#### *Checking The Results --- Monday, August 19th, 1996*

*On Monday I went into the school and wrote out the grades obtained by all my students in their 1996 Leaving Certificate Examination (the state examination for sixth form students). The following is a summary:*

- 16 students out of 19 students got an honour in higher level mathematics (not to be confused with the 1995 group of 23 higher level mathematics students who partook in the second singularity study). No student failed. I was very pleased with this result.*
- 9 students out of 16 students in a mixed ability group got an honour in physics/chemistry combined (single subject); 6 students passed and 1 student failed. I was responsible for teaching the chemistry section of this course. This is the lowest failure rate in this subject I have seen in our school in a long time. I was particularly pleased with this result.*
- 4 students out of 11 students got an honour in chemistry (taken as a single subject); 3 students passed and 4 students failed. I was quite disappointed with this result.*

*The third group was the group of students who were involved in the action research project this year (1995/1996). I was almost tempted to ask 'What is the point of doing action research?' One of my claims in my 1996 report 'A Way of Knowing My Committed Service in Education' (this present study) was that I helped most of the students in the chemistry group to improve their learning (Singularity Study Three: page 54).*

### Part Three

*After closer analysis of their summer 1995 chemistry results (based on an examination of half the course) and their summer 1996 chemistry results (based on an examination of the full course) it can be seen that most of the students improved their performances which is an indication that their learning improved (see table S3.10).*

**Table S3.10. Results for sixth form students' tests in June 1995 and June 1996.**

| <b>Student's Name</b> | <b>Student's June 1995 Test Result Chemistry</b> | <b>Student's June 1996 Test Result Chemistry</b> |
|-----------------------|--|--|
| <b>Eamonn F</b>       | <b>E</b>   | <b>D2</b>  |
| <b>Ethan G</b>        | <b>F</b>   | <b>D1</b>  |
| <b>Afnan HZ</b>       | <b>B3</b>  | <b>C2</b>  |
| <b>James K</b>        | <b>F</b>   | <b>D1</b>  |
| <b>David M</b>        | <b>C3</b>  | <b>B3</b>  |
| <b>David O</b>        | <b>F</b>   | <b>E</b>   |
| <b>Gary P</b>         | <b>E</b>   | <b>E</b>   |
| <b>Aidan R</b>        | <b>E</b>   | <b>C3</b>  |
| <b>Kevin R</b>        | <b>E</b>   | <b>C1</b>  |
| <b>Paul R</b>         | <b>D1</b>  | <b>E</b>   |
| <b>Jarlath T</b>      | <b>E</b>   | <b>E</b>   |

- 7 students improved their grades.
- 2 students obtained the same grade in 1995 and 1996 (Es twice).
- 2 students' grades disimproved: Afnan HZ's grade went from B3 to C2, an honour on both occasions and Paul's went from a D1 to an E, from a pass to a fail.

*One of the original 'whys' of my involvement in this particular project in 1996 was that 8 students out of the 11 students failed their summer 1995 chemistry test (any grade below a D2 is a fail). For me, that was very much a matter for concern. It was therefore my belief that, amongst all my Leaving Certificate students, these students were in most need of 'extra' help from me in the 1995/1996 school year.*

*I believe my consciously nurtured commitment to these students in an educational action research project in 1995/1996 signifies a preferential option for the most 'disadvantaged' examination students in my teaching practice in 1995/1996.*

My appreciation of the complexity and contradictions associated with attempts to act more justly and more democratically in the classroom grew during the second and third singularity studies when reflecting on the emphasis I was placing on teaching/learning communicative activities:

### Part Three

*Again, with a prominent focus on what I was doing, the notion of nurturing 'learned helplessness' (Egan, 1994: p. 80-81) in my sixth form students comes to mind and also the dawning and disarming notion that, paradoxically, while I was working for 'proximate justice' [Niebuhr held that we cannot achieve total equality in society but we must take small steps to move in that direction (Bacik, 1989: p. 120)] in one arena in eliciting and utilising students' ideas about changes in my teaching, I was inadvertently further nurturing an injustice in another arena (in perhaps making the sixth form students more dependent on my teaching)<sup>1</sup>. [Singularity Study Three: page 23]*

Despite my belief in the overall positive processes and outcomes for my sixth form students (1994, 1995, and 1996) of collaboratively eliciting/creating, enacting more fully and evaluating teaching/learning communicative activities, in my fourth singularity study (1997) I gradually decided (in an 'emergent-design' fashion) to leave enacting more fully and evaluating teaching/learning communicative activities aside so that I could focus much more clearly and overtly on one student's learning in higher level mathematics.

#### Singularity Study Four (1997)

In my fourth singularity study I began to focus on a smaller number of students within a group of sixth form mathematics students in attempting to *exercise a preferential option for the most 'disadvantaged' students* (Singularity Study Four: page 4):

*Over the four years (1994 - 1997) in action research enquiries I have consistently worked with groups of students who most needed to improve their percentages in specific subject areas (mathematics and chemistry). [I realise that percentages are not necessarily measures of ability or effort but I see them as indicators of performance and achievement.] I see this as living in the direction of a more socially just commitment to serving the most 'disadvantaged' students (from the point of view of aptitudes displayed in class, percentages obtained in tests, and sometimes interest levels). Oftentimes some of the students were underachieving.*

*My experiences of Chris, Hugh and Terence for a year led me to believe that they were very weak at mathematics and their low percentages in summer 1996 (18%, 23%, and 25% respectively) confirmed this view. I felt in attempting to help them I was trying in some sense to help some of the most needy students in the class.*

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<sup>1</sup> Here, the notion of 'unintended consequences of action' (Giddens, 1979: p. 56) comes to mind.

### Part Three

*The following note from my Journal, October 1st, 1996 shows my concern with justifying working with three students:*

*Social Justice: This issue came up in July 1996 after sharing my paper in Bath. I originally felt that it would be unjust of me to include only a few in a study of a singularity because I didn't want to be seen to give special treatment to some students over other students. Also, I wanted a whole class (or most of them) to benefit from a study rather than a selected few. I wanted all to gain advantage and not only a small number — if advantage was/is to be gained. However, with my growing appreciation of the radical nature of exercising a preferential option for the most 'disadvantaged' and the emerging need to get closer to an understanding of the growth in learning of specific individuals in specific curricular areas along with an extended notion of an 'educational community' (beyond my own classroom) I have begun to believe that I am fully justified in working with only a few students out of a group. [Singularity Study Four: page 4]*

In the above paragraph, with my enhanced understanding in 1998, I can discern the dialectical tension of the winning out of Rawls's second principle, '*maximize the smallest portion*'<sup>1,2</sup>, over the utilitarian ideal of a society committed to achieving '*the greatest good of the greatest number*'<sup>3</sup>

However, as well as focusing on students obtaining the poorest results in the 1997 singularity study, I also wished to communicate to the whole group a feeling of being included in the project:

*One way in which I involved the whole class was in giving them seven tests between September and March, documenting their errors (Data Archive) and giving feedback. Although this particular feature wasn't the main focus in this year's study of a singularity (Basse, 1995: pp. 110-113) ----- I saw it as a way of helping most of the students in the class and hopefully giving them all some sense of sharing in the project. It was a compromise between no involvement and more systematic and fuller involvement for the whole group. (Singularity Study Four: page 5)*

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<sup>1</sup> Ricouer, P. (1991) *Love and justice*. In: Jeanrond, W. G. and Rike, J. L. ed. *Radical Pluralism and Truth: David Tracy and the Hermeneutics of Religion*. New York: Crossroad. Reprinted in Kearney, R. ed. (1996) *Paul Ricouer. The Hermeneutics of Action*. p. 36. London, Thousand Oaks, New Delhi: Sage.

<sup>2</sup> Rawls, J. (1971) *A Theory of Justice*. pp. 302-303. Oxford University Press.

<sup>3</sup> Rockefeller, S. C. (1991) *John Dewey. Religious Faith and Democratic Humanism*. Ch. 5: *Democracy, Education, and Religious Experience*. p. 242. New York: Columbia University Press.

### **Part Three**

Six weeks after initiating meetings with Chris, Hugh, and Terence I felt I was getting bogged down in my enquiry. The following lengthy excerpt captures, I believe, the nature of my struggle, my attempts to resolve it, and also my dialogic disposition during my fourth study of a singularity (Singularity Study Four: pp. 8-11):

***Journal, November 19th, 1996***

#### ***Present Struggle***

*It is as if I am looking for an approach route for a mountain and I haven't found one. I can sense the mountain which is manageable but the route is slow to show itself. There is a genuine fog of unknowing here.*

#### ***How do I come to understand how a student comes to understand?***

*I have three sixth form mathematics students in mind, Chris, Hugh and Terence (I have met them twice as a group of three and have written out details of their efforts and errors for three tests — too much emphasis on errors perhaps? I would say yes! — and to be honest I feel their level of motivation and achievement is quite low).*

*My present question seems to be:*

***In helping my students to improve their learning in mathematics, how do I gain a fuller understanding of how my students come to understand a particular content area in mathematics?***

*I am truly humbled by this question.*

*I am looking for a springboard to action but there is no springboard. I know that I have written about a commitment to the most disadvantaged but if these students are getting poor results in their tests how can I get to grips with what they are learning if this seems at present to be very little?*

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*My more practical questions at the moment are:*

- 1. Are these three students my 'best' choice for my 'emerging' singularity study?*
- 2. What students do I choose for the singularity study?*
- 3. What content area do we work with?*
- 4. Do I use some statistics?*
- 5. What kind of evidence do I need to gather and how will I gather it and when?*

*Gladly, I am meeting Ann Carroll (who teaches higher level mathematics in the local convent secondary school) this evening and I will ask Ann to question me on the kind of evidence I could produce to:*

- 1. Show that my students' learning of mathematics is improving.*
- 2. Show that I am influencing my students' learning.*
- 3. Show that I am influencing the spiritual, moral, social or cultural development of the students.*

*[These last three questions were suggested in an email correspondence from Jack Whitehead on 10 - 10 - 1996 (pp. 42-43 of email file). I concentrated mostly on Q.1 and Q.2.]*

*I relayed the above information to Jack Whitehead who responded through email on November 20th, 1996:*

*I like the questions you are going to ask Ann. They are the crucial ones. I also liked your question: 'In helping my students to improve their learning in mathematics, how do I gain a fuller understanding of how my students come to understand a particular content area in mathematics?'*

*I don't think you need to come up with a 'new cognitive theory along with an original epistemology' ! What I think is needed is a story of your professional life with a group of your students as you work at helping them to improve their understanding of mathematics. If Ann could question some of your pupils in relation to the intentions you have for a lesson to see to what extent she could relate your pupils' understanding of mathematics to your intentions, I think this would be a great help. [I acted on this suggestion as an 'imagined solution' in the action-reflection cycle later on in the study.]*

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*You might take your question and move between understanding what particular individuals are learning and making judgements about the whole class. This would help you with the problem [which I had originally stated to Jack] of not wanting to single out any individual for preferential 'treatment'. Let the students lives and learning show through your text.*

*[In this report, with my growing appreciation of the notion of social justice as a guide to action, I believe I justify exercising a preferential option on Hugh's behalf.]*

#### *Journal, November 19th, 1996: Meeting with Ann Carroll (7.30 - 8.30)*

*Ann sensed that I was getting bogged down and suggested that the three students I had chosen seemed to be finding higher level mathematics very difficult. She suggested that there was 'too much similarity' and that I needed 'comparison'. Why not take students that were at three different levels? The three students I had chosen were finding the going tough. 'Higher level mathematics is a difficult subject' (Ann's comment) and I felt that Chris, Hugh and Terence were hardly even making the recall and instrumental understanding ('knowing how') levels as mentioned in the Republic of Ireland DES mathematics syllabus. Ann's suggestion confirmed for me what I had already been thinking. [I can remember the three students not being able to recall the substitution made to integrate  $(a^2 - x^2)^{1/2}$  when I asked them this last Wednesday (November 13th) after doing it in class that day!]*

*Ann also suggested that higher level students weren't the most disadvantaged group in the school.*

*I asked how I could justify changing the students I was working with and Ann at some stage mentioned that I couldn't do what I was trying to do with the three students I had chosen because there simply wasn't enough time.*

*I was immediately satisfied that the time demands of the course, in the way that they affect the pace of lessons, in tension with the amount of individual attention needed to accompany a student who is moving through the learning outcomes in mathematics as stipulated by the DES could help me justify changing the students I was working with.*

*In short I need to work with students who are progressing faster through the different student learning outcomes in specific areas of mathematics. As mentioned above (earlier in the journal) I have asked Paul and Felim to work with me and they have said 'yes'. I now need to talk to Hugh who I want to work with because of the better relationship base and also because Hugh obtained a D grade in his Junior Certificate Examination in Mathematics whereas Chris and Terence had both obtained Bs. [Here, I believe I was still trying to exercise a preferential for the most 'disadvantaged' student.] I will need to gently disengage with Chris and Terence regarding the group meetings and I have a feeling that they won't really mind. It's important that I communicate with the three lads in a way that they are happy with the new intended working group. Ann had suggested that I*



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*merely add two others to the group of three but I feel that this would make the group too big.*

*Ann said that we needed to think more about the 'evidence' that I need and that it would be better to do the (main part of the) singularity study after Christmas and to use the time between now and Christmas to structure the type of analysis I intend doing. I had stated that I wanted a curricular emphasis and that I didn't necessarily want to 'prove' Bloom's Taxonomy.*

*I notice that Ann didn't entertain the notion of Chris, Hugh and Terence being 'weak' at mathematics and said that they could possibly get on quite well in ordinary level mathematics.*

*If Hugh agrees, the following will be the three students with whom I will try to work more closely:*

- *Hugh who is on an E/D level of performance and who will struggle to pass the higher level course.*
- *Felim who is capable of getting a C (I will check his perception of the situation).*
- *Paul who is very good at mathematics and is presently potentially on a B/A achievement level regarding mathematics (I talked with him today and this is also his perception).*

*My immediate task is to negotiate with Hugh and Chris/Terence and then if Hugh agrees to set up a first meeting with Felim, Hugh and Paul before Christmas. [Singularity Study Four: pp. 8-11]*

Eventually, both Ann and myself felt that Felim and Paul were doing fine and so Hugh and his learning in mathematics became the central focus of the study. **The role of action reflection cycles [page 48] in discerning this focus is shown in the Appendices [pp. 347-348].**

To conclude this first section of Chapter Eight, the following excerpt (Singularity Study Four: pp. 70-73) [pp. 170-172] further addresses my concern with justifying the living out of a preferential option for one of the most 'disadvantaged' students in the sixth form mathematics group of students during the 1997 singularity study. The excerpt also

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provides some evidence that most of the students' understandings of mathematics were enhanced during the project.

*In short, my compromise was to give the whole group feedback on seven tests between September and March in an error elimination approach to growth in understanding or, more positively, to help some of the students to unblock part of their conceptual vision in understanding mathematics.*

*I systematically documented every student's error for five tests from September to February during the course of the enquiry [I documented only the maxima/minima errors for the Trial Leaving Certificate tests in March (the seventh test) and will comment on these results later] and didn't systematically share every single error with each student but there was some sharing and that's precisely where I compromised.*

*My predominant interest was to get more on the inside of Hugh's understanding in mathematics and I made the professional judgement to 'privilege' the individual over the group in my particular situation and, regarding the problem of not wanting to single out any individual for preferential 'treatment', I believe that in concentrating on Hugh this year I was consciously living out a preferential option for one of the most 'disadvantaged' students in my higher level sixth form group of mathematics students.*

*I believe there is a very significant point of active justice involved here, and, while the notion of living out justice in the form of exercising a preferential option for the 'poor' came to me through my experience of sharing a house with a priest in Canada (Vancouver Island) for a few months in 1975 when I was teaching Native Americans and through my limited knowledge of liberation theology, it is worth stating that such a conception, in my view, resonates powerfully with John Rawls's 'General Conception' of social justice (Rawls, 1971: p. 303):*

*All social primary goods - liberty and opportunity, income and wealth, and the bases of self-respect - are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favored. (Rawls, 1971: p. 303)*

*Time constraints and pace of teaching were also significant factors. Nevertheless, regarding whole group improvements in learning mathematics, one could argue that the following table (table S4.1) provides some evidence that most of the students' understandings of mathematics were somewhat enhanced during the course of the enquiry:*

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**Table S4.1. Sixth form students' summer 1996 and enquiry 1997 mathematics results.**

| <b>Student's Name</b> | <b>Summer 1996 Result</b> | <b>Enquiry 1997 Average % For Five Continuous Assessment Tests</b> | <b>Summer 1997 Result</b>       |
|-----------------------|---------------------------|--|---------------------------------|
| <b>FB</b>             | 30                        | 46   | E (25-39)                       |
| <b>CB (Chris)</b>     | 18                        | 44   | F (10-24)                       |
| <b>FC (Felim)</b>     | 48                        | 77   | B3 (70-74)                      |
| <b>SF</b>             | 30                        | 76   | [Ordinary Level]<br>A1 (90-100) |
| <b>PK</b>             | 30                        | 58   | C2 (60-64)                      |
| <b>HK (Hugh)</b>      | 23                        | 45   | [Ordinary Level]<br>C2 (60-64)  |
| <b>AM</b>             | 44                        | 69   | C2 (60-64)                      |
| <b>CMcB</b>           | 48                        | 70   | B3 (70-74)                      |
| <b>PMcC (Paul)</b>    | 83                        | 87   | A2 (85-89)                      |
| <b>RMcC</b>           | 30                        | 42   | F (10-24)                       |
| <b>AMcD</b>           | 94                        | 98   | A2 (85-89)                      |
| <b>BOD</b>            | 49                        | 74   | D1 (50-54)                      |
| <b>TS (Terence)</b>   | 25                        | 43   | [Ordinary Level]<br>C2 (60-64)  |

*It has been my experience that students can often score higher grades in continuous assessment tests based on recent material than in end of year tests based on the whole year's work, and as five of the tests during the enquiry were continuous assessment tests based on recent material, this factor was, in all probability, operative in the above events - but it wasn't necessarily the only factor influencing test results.*

*Comparing the 1996 Summer Results (based on a whole year's work) and the 1997 summer Leaving Certificate Results (based on two years' work), it can be seen that RMcC was the only person who disimproved in performance, the first two students [FB and CB (Chris)] getting the same result and all other ten students improving their performance or else maintaining the same reasonable to high standard. It is worth*

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*stating that I advised Chris, Hugh, RMcC and Terence to do ordinary level mathematics in the Leaving Certificate Examination (Singularity Study Four: page 75). Hugh and Terence followed my advice and obtained a C2 (60-64), whereas both Chris and RMcC refused to act on my recommendation (their right) and both students obtained an F (10-24). FB 'slipped through the net' and failed higher level mathematics but got fixed up with a place in a Further Education College. [I let FB go his own way as he missed quite a number of days from school but still had a lot of ability in mathematics and is brilliant at computers. I can remember once asking FB and his fellow students in first year (as part of a social and personal education class) to draw something about their family or friends and he drew a bunch of flowers, four roughly the same size and one small flower on the extreme right. FB was the big flower on the left and his father (who was in England and separated from FB's mother) was the smallest flower on the right - the one furthest from FB; this was another factor in my approach to FB (Frank).]*

*So, on balance, I would again state that it is my belief that most of the students' understandings of mathematics were somewhat enhanced during the course of the enquiry' and that I had a positive influence on the students' understandings of mathematics. [Singularity Study Four: pp. 70-73]*

Hugh, who was the centre of the study, clearly improved his grades in mathematics during the 1996/1997 school year. Although Hugh changed from higher level to ordinary level mathematics in March 1997, there is ample evidence to show that Hugh's understanding of maximum and minimum problems in higher level mathematics improved somewhat during the course of the enquiry, as has been described and explained in my fourth singularity study and as will be explained and developed further in Chapter Eleven.

This concludes my preliminary look at ways in which I believe I have acted in a more socially just manner in the classroom during the 1994, 1995, 1996, and 1997 singularity studies and an accompanying look at the students' improved grades in tests and self-ratings for learning [see pages 316, 332, and 345 of the Appendices for the sixth form students' self-ratings for learning for the 1994, 1995, and 1996 studies] which act as indicators of improved learning for the majority of the sixth form students in chemistry (1994 and 1996) and mathematics (1995 and 1997) during each of the four singularity studies.

## 2. How Recent Readings Have Enhanced My Understandings of Social Justice

My intention in this section is to show how some recent readings have enhanced my understandings of justice and to connect these understandings to the previous section where I proffered a preliminary description and explanation of the ways in which I attempted to act in a more socially just manner in the classroom. In the section which follows this present section I will then dialogue with some other literature in order to look at other understandings of social justice and, in particular, to discern what are distinctive about my own developing understandings of living out more socially just actions in my practice<sup>1</sup>. In these enterprises I am also conscious of a sense of vocation (as in an inclination to a particular career calling) in which I am attempting to build a vision for my future actions and praxis<sup>2</sup> in the classroom; this task I now see as a centrally important ‘why’ of my theorising. I’ll begin with the following:

*While there is agreement in Catholic theology that justice is the firm and constant will to give everyone (her/his) due, this description is too vague to determine what justice is in a concrete case. Traditionally, justice has been divided into commutative, distributive, and legal or general justice. Pius XI added the term, social justice. But even these terms are highly controverted among Catholic authors, especially, the terms, legal and social justice. (Civille, 1981: p. 298)*

General justice was called legal justice by Thomas Aquinas because he understood

*‘divine and natural law (not positive law) as having for its function the direction of action to the common good’ (Civille, 1981: p. 299).*

Later, as basic rights became enshrined in positive law (which was believed by many in the 16th and 17th centuries to be ultimately based on divine and natural law), some thinkers came to believe that people had rights only if they were stated in positive law (woman/man-made law). Eventually, by the beginning of the twentieth century,

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<sup>1</sup> Both teaching and action research (which includes the writing of my thesis) are central to my practice.

<sup>2</sup> I understand praxis as informed committed actions (McNiff, Lomax, and Whitehead, 1996: p. 8) in which practice and theory are closely intertwined (The Fontana Dictionary of Modern Thought, 1988: p. 676).

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theologians were using the term legal justice to mean positive law. This was a complete reversal of the position of Aquinas (Civille, 1981: p. 299).

*Because of the ('misuse') of the term, legal justice, Pius XI in 1931 used the term social justice to indicate conformity with the common good, especially in the economic area. There is still debate over the precise meaning of the term [social justice]. Some see it as a virtue that regulates the structure of society<sup>1</sup>. Others see it to be the same as Aquinas' general justice. Either way, the important element is that individual acts of justice (commutative and distributive) must be rooted in some higher justice that seeks the dignity of the person in the common good. (Civille, 1981: p. 299)*

Rawls (1971), when considering the topic of social justice, sees the basic structure of society as the primary subject of justice. **By basic structure of society Rawls means:**

*the way in which the major social institutions distribute fundamental rights and duties and determine the division of advantages from social cooperation. (Rawls, 1971: p. 7)*

I believe I can look upon my school as an example of a social institution<sup>2</sup>; I can also view the students and myself in a classroom as a particular social arrangement within that social institution where I, as a teacher, am the social authority within that social arrangement. In agreeing with Rawls's claim that justice is the first virtue of a social institution (Rawls, 1971: p. 3), I can also fully appreciate the crucial importance of the notion of distributive justice<sup>3</sup> and its operation within such a social arrangement where I, in my teaching role, distribute my time commitments and my self commitments among and between students and myself in the classroom.

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<sup>1</sup> Rawls (1971) takes this view.

<sup>2</sup> I have patterns of relationships operative between people in mind here.

<sup>3</sup> 'Distributive justice inclines the rulers of society (community, family) to distribute the goods and burdens of that society according to the merits [deserts] and capabilities of the members.' (Civille, 1981: p. 298)

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When Ricoeur (1991: p. 30) claims that there is an '*almost complete identification of justice with distributive justice*' in Rawls's *A Theory of Justice*, I believe it may be worth stressing '*almost*'; Rawls (1971) states:

*We cannot, in general, assess a conception of justice by its distributive role alone, however useful this role may be in identifying the concept of justice<sup>1</sup>. We must take into account its wider connections ----- one conception of justice is preferable to another when its broader consequences are more desirable.* (Rawls, 1971: p. 6)

If efficiency, coordination, and stability are three fundamental social problems connected with that of justice in helping to bring about a viable human community, as Rawls contends (Rawls, 1971: p. 6), it seems to infer that his full understanding of justice rather than his definitional general conception of social justice (Rawls, 1971: p. 303) involves more than the notion of distributive justice.

Further, while Rawls states that his theory of justice as fairness is offered as an account of certain distributive principles of society, he also acknowledges that his conception of justice is only a part (albeit the most important part in Rawls's view) of a social ideal where a social ideal is understood as a complete conception defining principles for all the virtues of the basic structure of society (Rawls, 1971: pp. 9-10).

Relating the above to my practice in the classroom, I am making three points:

- 1. A working notion of distributive justice is crucially important.**
- 2. Justice means more than distributive justice.**
- 3. There is more than justice involved in exercising virtue in the classroom.**

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<sup>1</sup> Rawls distinguishes '*the concept of justice as meaning a proper balance between competing claims from a conception of justice as a set of related principles for identifying the relevant considerations which determine this balance*' (Rawls, 1971: p. 10). He then explains further: '*The concept of justice I take to be defined, then, by the role of its principles in assigning rights and duties and in defining the appropriate division of social advantages. A conception of justice is an interpretation of this role.*' (Rawls, 1971: p. 10)

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In this chapter, which I have called 'Making a Case for More Socially Just Actions in the Classroom', it is of central importance to appreciate that

**exercising a preferential option for the most 'disadvantaged' students during the four singularity studies constitutes my working notion of distributive justice.**

In 1994 I worked with a group of sixth form chemistry students who were getting the poorest results and within this group I gave a further special focus to the students who were the most 'disadvantaged' in terms of results and interest levels [pp. 157-160]. On two occasions we used groupwork in which students with better test results helped those with poorer results [page 160 of this chapter and Singularity Study One: page 38].

In 1995, when I changed the dialogue group from Ronan and me to four other sixth form mathematics students along with Ronan and me towards the beginning of the enquiry, I did this to minimize the potential disadvantage for Ronan [page 85] and one could argue that in abdicating '*my position of centrality - in favour of the vulnerable other*' (Kearney, 1984: p. 63) I was also acting more justly in the Rawlsian sense in that I was attempting to '*maximize the smallest portion*' (Ricouer, 1991: p. 34). The 'smallest portion' in this situation was the potential, and perhaps actual, power available to Ronan in our one-to-one dialogue. Whilst I later (April 1998) more fully appreciate that the change from one-to-one dialogue to one-to-five dialogue involved the notion of distributive justice, I was certainly conscious of distributing power/influence in order to create a fairer balance at the time (1995).

In 1996 I again worked with a group of sixth form chemistry students who were the most 'disadvantaged' group of students in terms of results. However, as in 1995, I also became more aware that:



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*'while I was working for 'proximate justice' in one arena in eliciting and utilising students' ideas about changes in my teaching, I was inadvertently further nurturing an injustice in another arena (in perhaps making the sixth form students more dependent on my teaching)' [top of page 164].*

In 1997 I eventually focused on the most 'disadvantaged' student, in terms of results, within a group of sixth form mathematics students. I also grew to appreciate more fully the increasing complexity connected with the task of acting in a more socially just manner in the classroom [pp. 164-169]. Outside factors like length of course and time available and internal competing demands like the pace of teaching/learning in tension with students' aptitudes (rates of learning) and the need to get on the inside of a student's understanding led me to make a trade-off between working with (a) Chris, Hugh, and Terence and making practically no progress and (b) working with Hugh and achieving a fuller understanding of his changing understandings in maximum/minimum problems in mathematics. In choosing the latter, I may have neglected Chris and Terence somewhat; however, as there is also a sense in which the 'problem' was structural<sup>1</sup> (length, difficulty of higher level mathematics course, time available, students' sporting commitments), I feel there was little more I could have done in the particular circumstances - I compromised.

Rawls's conception of social justice, to my mind, harmonises with, and can help me to extend, my working notion of distributive justice as expressed in my praxis of exercising a preferential option for the most 'disadvantaged' students:

*All social primary goods - liberty and opportunity, income and wealth, and the bases of self-respect - are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favored<sup>2</sup>. (Rawls, 1971: p. 303)*

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<sup>1</sup> Hugh Lauder, University of Bath, in two email communications on December 5th, 1997 and February 18th, 1998, has helped me to more fully appreciate structural constraints operative within the notion of 'trade-offs incurred in any ethical decisions made' when enacting more democratic and more socially just actions in the classroom.

<sup>2</sup> The 'maximin formula' (Sen, 1992: p. 146) is by no means dated and is still present in Rawls's 1993 political conception of justice (Rawls, 1993: pp. 5-6): the phrase 'social and economic inequalities are (to be) to the greatest benefit of the least advantaged' is used in Rawls (1971: p. 302) and Rawls (1993: p. 6) in connection with Rawls's Second Principle of Justice.

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In particular, in exercising a preferential option for the most 'disadvantaged' within the classroom I now ask:

- How do I decide who is the most 'disadvantaged'; that is, what criteria do I use?
- How can I help you (the most 'disadvantaged') to improve your learning?
- What is being distributed? [freedom, opportunity, time, care, attention, guidance, work, voices and power through eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities?]

There are two important points I'd like to make here regarding my developing understanding of my work. Firstly, during the 1994, 1996, and 1997 singularity studies, I have used one of Whitehead's primary questions and a primary question in my enquiry, *'How can I help you to improve your learning?'* (Laidlaw and Whitehead, 1995: p. 2) within the process of acting more justly in the classroom when responding to the question, *'How do I exercise a preferential option for the most 'disadvantaged'?'* Further, it is important to stress my belief that the above communications [pp. 176-178] regarding my exercise of a preferential option for the most 'disadvantaged' students during the four singularity studies confirm that my notion of distributive justice is a working notion of distributive justice as expressed through praxis and my growing understanding of that praxis<sup>1</sup>.

Secondly, I claim that I was also acting in a more socially just manner and again using the same primary question in the 1994, 1995, and 1996 singularity studies through the processes of eliciting/creating, enacting more fully, and evaluating teaching/learning

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<sup>1</sup> That is, there is a sense in which my understanding of my own practices developed along a practical consciousness - discursive consciousness (Giddens, 1979: p. 5) continuum over time throughout my enquiry. See Footnote 2, page 23.

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communicative activities where sixth form students were afforded opportunities to express more voice and more power (as argued in Chapter Five and Chapter Six) in connection with how they thought they should be taught in the classroom. This second point, which stresses less unequal power relations between the sixth form students and me, supports my claim that in the first three singularity studies more socially just actions were also enacted through engaging in more democratic actions in the classroom.

**In the arguments that follow I build up a justification for the usage of the word ‘love’ and for the inclusion of my claim that words from scripture (in particular, root metaphors) influence and have influenced how I am towards my sixth form students as others, in my attempts to act more justly in the classroom. I also extend my meanings to include poetic metaphors in general.**

I stated earlier (page 175) that *‘There is more than justice involved in exercising virtue in the classroom’*. In responding to this statement I will initially address the third of the following three characteristics of rights<sup>1</sup> within the following principles of Catholic theology:

*First, there is the corresponding duty to use one’s rights properly and also the duty to recognise the rights of others. Secondly, there is a hierarchy of rights. One person’s right to food is a higher right than another’s right to a luxury item. The more a right is necessary to ensure human dignity, the higher or more important is that right. Thirdly, there is a relation between love and justice in resolving conflicts of rights* (Civille, 1981: p. 300).

#### **I. How Can Love Enable Justice to See Rightly in My Practice?**

Regarding the relation between love and justice within the third characteristic of rights, Civille (1981: p. 300) claims that *‘love enables justice to see rightly’*. Justifiably, I therefore ask, as one of the central value-questions in my thesis, **‘How can love enable**

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<sup>1</sup> I include the first two characteristics because they may be of interest to the reader and also because they are connected to the third characteristic.

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**justice to see rightly in my practice?’**. On this matter, Ricoeur’s essay on ‘Love and justice’ (Ricoeur, 1991: pp. 23-39) has helped me enormously to more fully understand the dialectic between love and justice.

Before further referring to Ricoeur’s essay I feel it is important to state that Ricoeur believes that some writers<sup>1</sup> offer an interpretation of religious language, in particular the language in the Bible, that is reductionist and that fails to appreciate the many *genres* which cannot all be treated as if they were of a uniform type<sup>2</sup> (Macquarrie, 1988: p. 390):

*‘In religious discourse generally, Ricoeur distinguishes five types: prophetic, narrative, descriptive, wisdom, hymnic. The biblical texts are a complex fabric in which all of these types are intertwined. There is no single formula<sup>3</sup> which can be applied indiscriminately. Attempted shortcuts can only mislead us and divert us from the real task of wrestling with the texts in all their multiplicity.’* (Macquarrie, 1988: p. 391)

## II. Love and Justice

In my view, when Ricoeur addresses the notion of love in his essay on ‘Love and justice’, he succeeds, as he intended, in avoiding the pitfalls of *‘simply praising it or falling into sentimental platitudes’* (Ricoeur, 1991: p. 23). Ricoeur chooses a consideration of the dialectic between love and justice as one way of avoiding these pitfalls.

*‘Here by dialectic I mean, on the one hand, the acknowledgement of the initial disproportionality between our two terms and, on the other hand, the search for practical mediations between them - mediations, let us quickly say, that are always fragile and provisory.’* (Ricoeur, 1991: p. 23)

<sup>1</sup> For example, Freud and Marx (Macquarrie, 1988: p. 390).

<sup>2</sup> Ricoeur believes that *‘the suspicions (within the ‘hermeneutic of suspicion’) rest on an interpretation (of religious language) that is too onesided and that fails to take account of the rich diversity of the language which it professes to interpret’* (Macquarrie, 1988: p. 390).

<sup>3</sup> For example: an explanation in terms of unconscious desires, class interest, ideology (Macquarrie, 1988: p. 390).

### Part Three

The essay is in three parts. In **Parts I and II** Ricoeur addresses the disproportionality between love and justice. In **Part III** he attempts to build a bridge between the 'poetics of love' and the 'prose of justice' (Ricoeur, 1991: p. 32).

In **Part I**, he focuses on three aspects of the language of love, shaped by the biblical tradition, which characterise the '*strangeness or oddness*' of the discourse of love. These are built around:

**A. The link between love and praise:** Ricoeur views the complex interweaving of literary expressions within the discourses of hymn, benediction, and macarism<sup>1</sup> as constituting the central aspect of 'praise'. One of his central points, I believe, is that in such poetry the key words cannot be reduced to a single meaning. (Ricoeur, 1991: pp. 25-26)

For example, Ricoeur's response to

*'Love is patient and kind; love is not jealous or boastful; it is not arrogant or rude. Love does not insist on its own way; it is not irritable or resentful; it does not rejoice at wrong, but rejoices in the right. Love bears all things, believes all things, hopes all things, endures all things.'* (1 Corinthians 13)

is that

*'The reader will have noted the interplay of assertion and denial, as well as the playful use of synonyms that makes akin quite distinct virtues, all of which run counter to our legitimate concern to isolate individual meanings.'* (Ricoeur, 1991: p. 26)

**B. The poetic use of the imperative within the 'command' to love:**

*'This unexpected distinction between commandment and law makes sense only if we admit that the commandment to love is love itself, commending itself, as though the genitive in 'commandment of love' were subjective and objective at the same time. Or to*

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<sup>1</sup> Beatitude.

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*put it another way, this is a commandment that contains the conditions for its being obeyed in the very tenderness of its oburgation: Love me!'. (Ricoeur, 1991: p. 27)*

**C. Love as a feeling:** Here, Ricoeur, emphasizes

*'the underlying analogy between an affect and the linguistic process of metaphorization --- the substantive tropology of love: that is, both the real analogy between feelings, and the power of eros to signify agape and to put it into words. ' (Ricoeur, 1991: p. 28)*

In the above three aspects of the language of love Ricoeur sees a disproportionality between love and justice.

In **Part II** of the essay on 'Love and justice', Ricoeur claims that because of the emphasis placed on 'the regulation of conflicts' within the concept of distribution, society is seen, in effect, as the space of a confrontation between rivals (Ricoeur, 1991: p. 31).

He then goes on to suggest that

*the highest point the ideal of justice can envision is that of a society in which the feeling of mutual dependence - even of mutual indebtedness - remains subordinate to the idea of mutual disinterest. (Ricoeur, 1991: p. 31)*

It is also suggested that the juxtaposition of interests within the 'disinterested interest' aspect of the basic attitude of the parties within the 'original position' in Rawls's work prevents the idea of justice from attaining the level of true recognition and a solidarity such that each person feels indebted to every other person (Ricoeur, 1991: p. 31).

Despite my belief that Ricoeur could have argued this latter point more fully, because a 'disinterested' attitude could also mean a form of detachment which includes a deep concern for the other, I accept the basic point that Ricoeur makes in **Part II** of his essay, that there are some features of distributive justice which are opposed to love: for example, the *emphasis* that is placed on 'argument' and on 'the regulation of conflicts'.

### Part Three

In **Part III** of the essay Ricoeur (1991: p. 32) attempts to bridge the disproportionate and sometimes oppositional discourses of love and justice by examining the tension between *love of one's enemies* and *the golden rule* as a paradigm of the living tension between love and justice in considering, for example, the following piece of scripture, where the two commandments are stated in the greatest proximity:

*But I say this to you: Love your enemies, do good to those who hate you, bless those who curse you, pray for those who treat you badly ——— Treat others as you would like them to treat you.*<sup>1</sup> (Luke 6.27-31)

The essence of Ricoeur's argument in **Part III** is that the **logic of superabundance**<sup>2</sup> within '*Love your enemies*' is directed not so much at the **logic of equivalence** of the golden rule as against its perverse interpretation. Ricoeur also argues that:

*Without the corrective of the commandment to love, the golden rule would be constantly drawn in the direction of a utilitarian maxim whose formula is Do ut des: I give in order that you will give* (Ricoeur, 1991: pp. 35-36).

In response to my question stated earlier, 'How can love enable justice to see rightly in my practice?' [pp. 179-180], the claim that the rule of love in '*Give because it has been given you*' (Ricoeur, 1991: p. 36) can help temper an inclination to '*I give in order that you will give*' (which Ricoeur regards as a perverse interpretation of the golden rule) has helped me to see more clearly a way in which love can enable justice to see rightly in my practice, **thereby enlightening my understanding as to how a poetic logic of superabundance can positively influence a prosaic logic of equivalence in my own actions in the education workplace.**

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<sup>1</sup> From: The Jerusalem Bible (1968). Reader's Edition. p. 80 of The New Testament. London: Darton, Longman & Todd.

<sup>2</sup> '*Unless a wheat grain falls on the ground and dies, it remains only a single grain, but if it dies, it yields a rich harvest*' (John 12:24) is another example of scripture communicating a logic of superabundance when understood as a root metaphor for action.

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Pertinently, Ricoeur (1991: p. 36) claims that what saves Rawls's second principle of justice<sup>1</sup> from falling into a subtle form of utilitarianism

*is its secret kinship with the commandment to love, inasmuch as this latter is directed against the process of victimization that utilitarianism sanctions when it proposes as its ideal the maximization of the average advantage of the greatest number at the price of the sacrifice of a small number*<sup>2</sup> (Ricoeur, 1991: p. 36).

The highly positive resonance between 'exercising a preferential option for the most disadvantaged', a source of inspiration from liberation theology for my more socially just actions in the four singularity studies [pp. 176-177], and Rawls's second principle of justice (Rawls, 1971: pp. 302-303) with its '*secret kinship with the commandment to love*' (Ricoeur, 1991: p. 36), together with Ricoeur's arguments regarding the nature of the dialectic between love and justice (Ricoeur, 1991: pp. 23-39), help justify, in my view:

- **the inclusion of the word 'love' in my construction of theory, and**
- **my claim that the notion of love enabling justice to see rightly in my practice was operative within my exercise of preferential options for the most 'disadvantaged' students in the four studies of singularities.**

It is my belief that this very important claim has as a paradigm the activating values prompting the shift from dialogue between Ronan and me to dialogue between four other students with Ronan and me in the 1995 singularity study:

*Being attracted to the radical call to care for the other (in my work context the most important other for me is the student) in the 'essential asymmetry' of Emmanuel Lévinas where 'I become a responsible or ethical 'I' to the extent that I agree to depose or dethrone myself - to abdicate my position of centrality - in favour of the vulnerable other' (Kearney, 1984: p. 63) and fearing a potential asymmetrical-trust*

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<sup>1</sup> 'Maximize the smallest portion' (Ricoeur, 1991: p. 34).

<sup>2</sup> Ricoeur views this 'sacrifice' as 'a sinister implication which utilitarianism tries to conceal' (Ricoeur, 1991: p. 36).



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*(sage/petitioner)<sup>1</sup> colouring in the nature of the one-to-one dialogic relationship between Ronan and myself, I desired to bring in other students to create a more just (fairer to Ronan) and more democratic (more student voices) balance of interests. [also an evidential base on page 85]*

It is my contention that a 'logic of superabundance' is at work within such a 'radical call'. Equally important is it to note that I only sometimes live this radical call. However, my claim is that I did live this radical call at significant times when attempting to act more justly in the classroom during the singularity studies.

On perhaps a most personal and vulnerable level of self disclosure, this radical call to care for others is primarily rooted in my belief in Christ, my commitment to following Christ, my daily prayer, my daily contact with scriptures, and the good influence of others in my life. To me, this is not inconsistent with teaching in a Catholic school which has a very human face in its attempt to both see and love students as others: nor am I denying my 'shadow side', the school's 'shadow side', or, indeed, the 'shadow side' of the Catholic Church<sup>2</sup>.

Regarding a personal level of activity and the third characteristic of rights within the principles of Catholic theology mentioned earlier [page 179], it is claimed:

*The demands of love always fulfill the rightful claims of another, but love enables justice to see rightly. Love tempers the rigid demands of justice for the good of our neighbor. It allows one in imitation of Christ to go beyond justice in meeting the needs of others.* (Civille, 1981: p. 300)

On a more global level of activity, in the same year that Rawls's *A Theory of Justice* was published, the Synod of Bishops (1971: p.6) in their document *Justice in the World* gave the following meaning to justice:

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<sup>1</sup> Footnote 1, page 85.

<sup>2</sup> By 'shadow side' I mean anything that is destructive to good relationship.

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*Action on behalf of justice and participation in the transformation of the world fully appear to us as a constitutive dimension of the preaching<sup>1</sup> of the Gospel, or, in other words, of Church's mission for the redemption of the human race and its liberation from every oppressive structure* (Civille, 1981: p. 303).

Returning to my own personal level of activity, I yet again note the striking compatibility and resonance between (a) the Gospel and scriptural 'command' to love operative within 'exercising a preferential option for the most disadvantaged' and (b) Rawls's notion of 'maximizing the smallest portion' (Ricouer, 1991: p. 34) with its '*secret kinship with the commandment to love*' (Ricoeur, 1991: p. 36). In my view, the latter [(b)] helps bolster both the purposive explanatory power and the theoretical weight of the former [(a)] in the 'why' of my practice.

After reflecting on pp. 179-186 above, my more fine-tuned explanation of my own practice leads me to claim that **when 'exercising a preferential option for the most disadvantaged students' at significant moments within my four singularity studies, 'love enabled justice to see rightly in my practice' at those important times.**

When Ricoeur, a philosopher, writes about a logic of superabundance in his essay on 'Love and justice' (Ricoeur, 1991: pp. 23-39), he is referring to the rule of love within particular scriptural metaphors. For example,

*'Unless a wheat grain falls on the ground and dies, it remains only a single grain, but if it dies, it yields a rich harvest'* (John 12:24)

is a specific case of scripture communicating a logic of superabundance when understood as a root metaphor<sup>2</sup> for action. However, it is important to me that I do not attempt to

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<sup>1</sup> Perhaps the word 'living' could be substituted for 'preaching' in this quotation. My own emphasis is on living the Gospel rather than 'preaching' it. I realize there is a sense that in attempting to live the Gospel one is perhaps also 'preaching' it (in the sense of acting as a 'role model' for others) but that is not my intention.

<sup>2</sup> I have learned the expression '*root metaphor*' from Tracy, D. (1978) *Metaphor and Religion: The Test Case of Christian Texts*. In: Sacks, S. ed. (1979) *On Metaphor*, pp. 89-104. Chicago and London: The University of Chicago Press.

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valorize my own position as a Christian by limiting my understanding of a logic of superabundance operative within my teaching and action research to a logic of superabundance emanating only from root metaphors of religious thought<sup>1</sup>. It is my belief that the rule of love and the logic of superabundance extend well beyond root metaphors of religious thought to poetic metaphors in general, people's actions, people's words, people's listening to each other, people's silences, music, art, and more.

In extending my theory of social justice to include poetic metaphors in general, I wish to connect to part of my *felt-reaction* to two impactive lines of poetry mentioned on page 143 [Chapter Seven],

*Because of the very real differences in power relations between my students and me, I feel a high degree of responsibility to help facilitate my students' expression of voice and, because of this feeling, I am inclined to move into a space of self-forgetfulness for the sake of my students<sup>2</sup>. In this movement I discern what I believe is a particular expression of the rule of love and of the logic of superabundance that is sometimes possible in my human heart and actions and that I believe is at the heart of my desire to be a teacher and to continue to be a teacher. [page 143]*

It is my contention that at precisely such times of self-forgetfulness, that 'love enables/enabled<sup>3</sup> justice to see rightly' in my teaching and educational action research practices in that my inclination to 'Give because it has been given you' (a logic of superabundance) wins/won out over my inclination to 'I give in order that you will give' (a perverse interpretation of a logic of equivalence) [pp. 183-186].

Thus, when I claim that **I exercised a preferential option for the most disadvantaged students at significant moments in my four singularity studies and**

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<sup>1</sup> Nor do I believe for one moment that Ricoeur limits his understanding of a logic of superabundance to that operative within, and emanating from, root metaphors of religious thought.

<sup>2</sup> Footnote 3, page 143.

<sup>3</sup> I am including present and past tenses here because I am referring to present imaginative experiences inspired by the two lines of poetry on page 143, to my writings for my thesis, and also to past experiences within my singularity studies.

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*‘- at precisely such times of self-forgetfulness, - “love enables/enabled justice to see rightly” in my teaching and educational action research practices in that my inclination to “Give because it has been given you” (a logic of superabundance) wins/won out over my inclination to “I give in order that you will give” (a perverse interpretation of a logic of equivalence)’ [page 187],*

can other teachers and educational researchers relate significantly to my claim? If it is accepted that one of the aims of educational action research is

*‘not the production of value-free knowledge (but) -- the improvement of the moral quality of the agency the teacher exercises in his or her practices qua educator’ (Elliott, 1995: p. 11),*

what positive contribution can my explanations of my own educational development in the arena of social justice make to other educational action researchers’ developing understandings of their changing practices? For educational researchers interested in social justice, do my own fuller understandings of my changing practices (which include my writing of this thesis) help proffer the challenge that a liberal-egalitarian approach needs to win out over an utilitarian approach to others in the education workplace, lest the most ‘disadvantaged’ be marginalized? These are closed-process and open-process questions that need the responses of other teachers and educational researchers in ‘receiving’ contexts to answer them from within the specificities of their own workplaces and practices. Further, these unresolved questions draw me to the edge of the time-and-space boundaries of my work, and reflexively remind me to be humble about the claims to knowledge I make especially with regard to their generalisability<sup>1</sup>.

The main point to appreciate in the above, I believe, is that the rule of love (the logic of superabundance) inspiring my actions/attitudes at particular moments in my work is not limited to root metaphors of religious thought but can be extended to include poetic metaphors in general. In this way, I have extended my theory of active justice to include notions of love stirred and inspired by poetic metaphors in general. Therefore, in moving

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<sup>1</sup> I will further address the notion of generalisability in Chapter Twelve.

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beyond, but including in an important way, the realm of root metaphors of religious thought, I believe I have extended the potential *transferability* (Lincoln and Guba, 1985: p. 296-298) and *relatability* (Bassey, 1995: p. 111) of my work.

At this juncture, I believe it is worth reminding the reader that, in connection with ‘How do I theorise?’, Whitehead (1985 and 1993) has been the key influence regarding my understanding of theory as a description and explanation of my educational development within and through the four singularity studies and in my understanding of values and their emergence over time, in the sense of overcoming their denial (e.g. more democratic actions, more socially just actions), as predominantly constituting the ‘why’ of my teaching and action research practices during my enquiry.

Continuing with the theme of theorising, it is also worth noting that Rawls’s principles in his theory of justice are chosen ‘*behind a veil of ignorance*’<sup>1</sup> and that Rawls does not claim that the principles of justice are ‘*necessary truths or derivable from such truths*’ (Rawls, 1971: p. 21) whereas the Catholic tradition has consistently rooted its notions regarding justice in a belief in the dignity of the person flowing from scriptures<sup>2</sup>. No doubt the Catholic Church clearly sees itself as having a claim to a particular fulness of ‘truth’, but lately there is an acknowledgement that

*the post-modern sensibility invites theology to develop a certain humility, viewing itself as a pilgrim form of meaning — [and, equally, an acknowledgement that] against the privatizing tendencies of the post-modern, faith needs to find a new language to challenge the entrenched injustices of our planet.* (Gallagher, 1995: p. 75)

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<sup>1</sup> ‘Among the essential features of this situation is that no one knows his(/her) place in society, his(/her) class position or social status, nor does any one know his(/her) fortune in the distribution of natural assets and abilities, his(/her) intelligence, strength and the like. I shall even assume that the parties do not know their conceptions of the good or their special psychological propensities.’ (Rawls, 1971: p. 12)

<sup>2</sup> For example, Gn 1: 26-27: *God created man(/woman) in the image of himself(/herself).*

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**In the above I am integrating insights from Rawls (1971: pp. 3-22 and pp. 302-303), from Ricoeur<sup>1</sup> (1991: pp. 23-39), and from some Catholic theology (Civille, 1981: pp. 291-311) to enhance my understandings in relation to love and justice within a living educational theory approach to action research (Whitehead, 1993) where I am predominantly theorising in an a posteriori fashion from my practice<sup>2</sup>.**

Continuing with the present theme of love and justice, it is also worth noting that Niebuhr<sup>3</sup> called upon liberal Christians to put a greater emphasis on establishing justice than on creating a community of love (Bacik, 1989: p. 120):

*justice is more effectice than love in creating a better society because it strives for equity and deals more effectively with power relationships. --- Only romantic idealists believe that privileged groups and sovereign nations will be guided by the law of love taught by Christ. In the real world Christians must learn to work for 'proximate justice'. In other words, we cannot achieve total equality in society but we must take small steps in that direction. --- Christian realism must not only counteract the negative aspects of power but must also use power for accomplishing good. (Bacik, 1989: pp. 120-121)*

It is my belief that Niebuhr's notion of 'proximate justice' is eminently practicable but perhaps his call upon liberal Christians '*to put a greater emphasis on establishing justice than on creating a community of love*' may have inadvertently and unnecessarily contributed to a mere oppositional understanding of the nature of the disproportionality between love and justice.

Niebuhr, who was a harsh critic of Dewey's liberal optimism in the 1930s, eventually conceded, in 1944, that democracy presupposes faith in the possibilities of human nature and that a consistent pessimism regarding human nature leads invariably to '*tyrannical political strategies*'. (Rockefeller, 1991: p. 244)

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<sup>1</sup> Regarding Ricoeur's theoretical perspective, Kearney (1984: p. 2) sees Ricoeur's approach as representative of '*a hermeneutics in debate with the human sciences*'.

<sup>2</sup> See McNiff (1993: p. 39) and McKernan (1994: p. 102).

<sup>3</sup> Reinhold Niebuhr, a Protestant theologian, was an '*outstanding teacher of social ethics*' (Bacik, 1989: p. 114) and is considered by Bacik (1989) to be '*the most influential theologian in the history of the United States*' (Bacik, 1989: p. 114).

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Despite the fact that he died in 1971<sup>1</sup>, I wonder if Niebuhr's shift in understanding from a low to a higher view of human nature in his early fifties along with his 'realistic' notion of 'proximate justice' might have placed him within a stance not dissimilar to one that accepts the nature of the disproportionality between love and justice as articulated by Ricoeur (1991: pp. 23-39)?

In conclusion, in acting in a more socially just manner in the classroom during the four singularity studies it is my belief that love enabled justice to see rightly in my practice at significant 'moments' in my enquiry and I have little hesitation in accepting that the tension of the dialectic between love and justice makes *'justice [a] necessary medium of love'*<sup>2</sup> (Ricoeur, 1991: p. 36).

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<sup>1</sup> Again, coincidentally, this is the year of publication of Rawls's *A Theory of Justice*.

<sup>2</sup> Ricoeur (1991: p. 36) wrote *'the necessary medium of love'*.

### 3. In Dialogue with Other Literature Relating to Social Justice

I have stated earlier [page 135] that, while the individual and society are distinctive [own comment], I believe they are neither fixed entities nor separate domains (Carr, 1995: p. 85). It is my belief that I and the sixth form students who worked with me in the four singularity studies, are members of society and that to the extent that I was exercising a preferential option for the most 'disadvantaged' students, as argued in the previous sections, I was also addressing issues of power and privilege in society. I contend that in changing my teaching practices I was sharing more power with the sixth form students and the sixth form students were becoming less 'underprivileged' in terms of being listened to more, their ideas on teaching being acted on more, and gaining in learning. It is also my belief that insofar as the sixth form students and I were engaging in more democratic actions and more socially just actions in the classroom we were, practically and theoretically, countering Noffke's view that 'living educational theory' seems incapable of addressing issues of power and privilege in society (Noffke, 1997: p. 329). Thus have I cleared further ground in my agreement with the following viewpoint mentioned earlier:

*the dual agenda of interrogating the meanings of democracy and social justice at the same time as we act to alter the social situation shapes [I prefer 'helps shape'] the potential of action research.* (Noffke, 1997: p. 334) [page 135]

However, Noffke (1997) also states:

*One critique of action research, particularly that in the teacher researcher model, has drawn attention to the limited ways in which issues of social justice have been addressed (Weiner, 1989). [Noffke (1997: pp. 329-330)]*

The aims of the 'equal opportunities' project in the UK in which Weiner was involved were primarily to (i) support *'teachers (as researchers) in exploring gender issues in their schools'*, and (ii) accumulate *'examples of good current practice aimed at reducing gender inequalities in education'*. (Weiner, 1989: p. 42)



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I'm not denying the importance of addressing such matters and I fully accept that gender is a highly significant social justice issue. However, when Weiner (1989) concludes her paper with:

*'the main teacher-researcher movement might have aimed to increase not only professional knowledge but also social justice'* (Weiner, 1989: p. 49),

it seems to me that Weiner has mostly *The Schools Council Sex Differentiation Project* (1981-1983) in mind, along with an accompanying notion that:

*'male middle-class ideologies and values are continually reproduced through the culture and curricula of educational institutions'* (Weiner, 1989: p. 48).

Again, I stress that these issues are not unimportant. My point, rather, is that Weiner's communicated vision of 'social justice' with its predominant emphasis on gender is a limited vision; that is, it is my belief that Weiner does not do justice to the notion of 'social justice'. Pertinently, my point is also that Weiner's notion of social justice does not extend to include within its meanings the possibility of more socially just actions being enacted in a male environment in the classroom, as is the case for my four singularity studies.

While Zeichner (1993: pp. 213-215) believes *'Weiner is right in her call for a focus in action research on both personal renewal and social reconstruction'*, he also states that:

*Despite Weiner's pessimistic conclusions regarding the lack of attention in teacher research to social justice issues, there have been and continue to be teachers who have acted on the social and political implications of their practice in their action research, both classroom research and school work research.* (Zeichner, 1993: p. 214)

Zeichner (1993: p. 214) then cites references to teachers and student teachers who have connected their action research to the dual aims of personal renewal and social reconstruction where the latter notion is associated with race, class, and gender equity. Therefore, Zeichner, unlike Weiner (1989), believes that a reasonable number of teacher researchers in the USA are committed to issues of social justice in their classroom action

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research, and, in responding to Weiner's paper, extends Weiner's communicated vision<sup>1</sup> of social justice to include issues of race and class, as well as gender. Nor is Zeichner's vision of social justice limited to gender, race, and class. Indeed, earlier in his paper, Zeichner (1993: p. 213) communicates an extensive vision of social justice to include issues of race, gender, social class and language background, religion, and sexual preference.

**My own vision of social justice is less formally sociological and more extensive again in that I believe it is possible to engage in more socially just actions in any intra-group or inter-group situation, or any combination thereof, where it is possible to exercise a preferential option for the most 'disadvantaged'<sup>2</sup>. I also believe that categorisations like women/men, black/white, gay/heterosexual, etc., while useful in terms of creating political pressure groups with positive influences can oftentimes, in such broad categorisations of human beings, inadvertently rob people of their complex individuality.**

Although I have a different vision of social justice to Zeichner, I concur with his view that

*while we should not ignore efforts to change structures beyond the classroom, the classroom is an important site for — action research that is connected to the struggle for greater educational equity and social justice. (Zeichner, 1993: p. 201)*

I contend that 'educational equity' in the sense of engagement in more democratic actions in the classroom and 'social justice' in the sense of acting more justly in the classroom are two central strands of activity in my enquiry as I respond to my research question:

**How do I create my own educational theory in my educative relations  
as an action researcher and as a teacher?**

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<sup>1</sup> Weiner (1989: pp. 41-51) also mentions race and disability in her paper but her primary emphasis is on gender equity.

<sup>2</sup> By group I mean a group of human beings. I realize it's possible to extend my definition to include plants and other animals but I feel an extended definition is not necessary for my thesis.

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In my living educational theory approach to action research, while I concomitantly refuse to eclipse contributions from students, critical friends, key respondents, and researchers in the literature, I do place a strong emphasis on my own sense of personal agency in my enquiry. Therefore, rather than refer to other approaches to social justice at this juncture, I believe it will be more beneficial, in terms of explicating my approach to theorising, to consider the relationship between structural injustices and personal agency, a highly relevant matter, in my opinion, for all teachers and researchers interested in acting in a more socially just manner in social settings.

Here, I draw on the work of Elliott (1993: pp. 175-186), who poses the following question as a central issue in addressing the relationship between the classroom practices of teachers and the school as a social system:

*'What is the relation between structures and personal agency in shaping the pedagogical practices of teachers?'* (Elliott, 1993: p. 176).

In responding to this question, I hope to accommodate my own approach, and the approaches of Weiner (1989), Zeichner (1993), and others<sup>1</sup>, to overcoming social injustices in educational settings.

According to Elliott (1993),

*From a normative-functionalist perspective (e.g. school effectiveness research) the classroom action research movement neglects the ways in which the system structures the activities of teachers in classrooms to limit and constrain their freedom to innovate.* (Elliott, 1993: p.178 )

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<sup>1</sup> For example: Griffiths, M. & Davies, C. (1993) Learning to learn: action research from an equal opportunities perspective in a junior school, *British Educational Research Journal*, Vol. 19, No. 1, pp. 43-58; Smith, B. (1996) Addressing the Delusion of Relevance: struggles in connecting educational research and social justice, *Educational Action Researcher: an international journal*, Vol. 4, No. 1, pp. 73-91; Noffke, S. (1997) Personal , Professional, and Political Dimensions of Action Research, *Review of Research in Education*, Vol. 22, pp. 305-343.

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Admittedly, the normative-functionalist perspective includes a notion of consensus about goals and purposes (Elliott, 1993: p. 179); but, when seen through a 'critical paradigm' lens, it seems that 'system' and 'structure' are viewed as sources of power external to the individual teacher in the classroom where the character of those sources is largely perceived as one of constraint (Elliott, 1993: pp. 179-180).

In contrast, *'Elliott argues that power is productive as well as constraining'*<sup>1</sup> (Somekh, 1995: p. 349), and building on the work of Giddens<sup>2</sup>, who understands systems as *'patterns of relationships across time and place'* (Elliott, 1993: p. 181), Elliott maintains that, as structural properties of social systems,

*rules<sup>3</sup> and resources<sup>4</sup> do not shape actions and interactions independently of the knowledge and consciousness of the individuals involved. --- Rather the structural properties of social systems are constituted and reconstituted in the actions of individual agents. Structure is 'internal' rather than 'external' to the consciousness of individual agents and is not to be equated with 'constraints'.* (Elliott, 1993: p. 183)

While Elliott acknowledges *'that practitioners' routinised behaviour and unquestioned assumptions are a serious barrier to change'* (Somekh, 1995: p. 349), he maintains that through reflective practice teachers and researchers

*'have access to their tacit understandings and are capable of strategic action'*<sup>5</sup> to transform their institutional settings' (Somekh, 1995: p. 349).

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<sup>1</sup> 'Structures impose limits on what individuals can do, but at the same time enable them to do things.' (Elliott, 1993: p. 183)

<sup>2</sup> According to Somekh (1995: p. 349).

<sup>3</sup> For example: the general procedures for establishing discipline, grouping students, electing prefects, entering students' test results on computer.

<sup>4</sup> Resources (Elliott, 1993: p. 182) can be 'allocative' (material things) and 'authoritative' (people).

<sup>5</sup> My belief in my own sense of agency (the opposite of passivity), and capability for 'strategic action', is also rooted in my understanding of self-efficacy where it is claimed that people tend to take action if two conditions are fulfilled [I replace 'behavior' with 'actions']:

(a) *They see that certain (actions) will most likely lead to certain desirable results or accomplishments [outcome expectations].*

(b) *They are reasonably sure that they can successfully engage in such (actions) [self-efficacy expectations].* (Egan, 1994: p. 82)

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What I am claiming in the above is that Giddens's notion of '*structuration*' (Elliott, 1993: pp. 175-186) can help dissolve the structure/agency dichotomy, when considering the agency of an individual action researcher in the classroom in attempting to overcome structural injustices<sup>1</sup>, and can also contribute to a broadening of perspective regarding the accommodation of different approaches to social justice<sup>2</sup>.

In Chapter Nine, I respond to two challenges from Hugh Lauder, University of Bath, who gave me feedback on Chapter Eight. In Chapter Ten, I reflect further on more socially just actions in the classroom and further develop my educational theory.

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<sup>1</sup> This can also be understood in terms of overcoming particular patterns of relationships which nurture 'disadvantage'.

<sup>2</sup> These issues are discussed further in Chapter Nine (pp. 212-215).

## Chapter Nine: Responding to Two Challenges Relating to My Dialogue with Other Writers

In the previous chapter [pp. 173-191], I have drawn on some of the work of John Rawls, in particular, in noting the high level of resonance between (i) Rawls's 'Difference Principle' which focuses on producing '*the greatest benefit of the least advantaged*' (Rawls, 1971: p. 302) and (ii) liberation theology's guiding principle of 'exercising a preferential option for the most disadvantaged'. The latter principle was operative within my teaching practice at significant moments in the four singularity studies of my thesis [especially in choosing and working with particular sixth form students] and its high degree of resonance with Rawls's 'Difference Principle' along with an attentive reading of Ricoeur's essay, 'Love and justice' (Ricoeur, 1991: pp. 23-39), which addresses Rawls's second principle, '*maximize the smallest portion*' (Ibid., p. 34), have helped me to understand how, and justify my claim that, love enabled justice to see rightly in my practice at important times throughout my four singularity studies.

### *Challenge One*

I wish to accept Hugh Lauder's challenge (Tuesday, June 23rd, 1998) that, as some of Rawls's work constitutes a significant and central base of argumentation in my theorising around 'More Socially Just Actions in the Classroom', I need to explain why I have chosen Rawls (1971) over Sen (1992) who has developed the notion of 'Justice and Capability' and has criticised some of Rawls's work (Sen, 1992: pp. 73-87).

Firstly, it is important to state that the 'Difference Principle' within Rawls's 1971 *General Conception of Social Justice* (which I have drawn on in Chapter Eight) was also part of Rawls's 1971 *Second Principle of Justice* for social institutions and was again included,

### Part Three

twenty-two years later, in Rawls's 1993 *Second Principle of Justice* despite some of Rawls's rewording of the two principles of justice between 1971 and 1993<sup>1</sup>:

#### *General Conception of Social Justice*

***All social primary goods - liberty and opportunity, income and wealth, and the bases of self-respect - are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favored.*** (Rawls, 1971: p. 303)

#### *Second Principle*

***Social and economic inequalities are to be arranged so that they are both:***

***(a) to the greatest benefit of the least advantaged, consistent with the just savings principle, and***

***(b) attached to offices and positions open to all under conditions of fair equality of opportunity.*** (Rawls, 1971: p. 302)

#### *Second Principle of Justice*

***Social and economic inequalities are to satisfy two conditions: first, they are to be attached to positions and offices open to all under conditions of fair equality of opportunity; and second, they are to be to the greatest benefit of the least advantaged members of society.*** (Rawls, 1993: p. 6)

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|---|
| <h2>1. Primary Goods and/or Capabilities</h2> |
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In Chapter Eight one of my central arguments is that exercising a preferential option for the most disadvantaged student(s) is highly consistent with utilizing the 'Difference Principle' (included within Rawls's precepts of justice) as a guide to action. Therefore, in responding to Hugh Lauder's challenge, the question pertinently seeking an immediate audience is:

*What precisely is Sen's main criticism of Rawls's work in connection with judgements relating to the 'Difference Principle'?*

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<sup>1</sup> According to Sen (1992), the formulation of the two principles of justice 'has undergone some change since their presentation in *The Theory of Justice* (Rawls, 1971: 60, 83, 90-5), partly to clarify what was ambiguous, but also to respond to some early critiques' (Sen, 1992: p. 75).

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Borrowing from Sen and stating it simply, if I am to make a judgement - an '*evaluative judgement*' - I need some information. This information constitutes the '*informational basis*' of that judgement (Sen, 1992: p. 73). In the contexts of my studies of singularities I am concerned with judgements of justice. It seems to me, whilst Sen refers to the '*extremism of giving total priority to the interests of the worse-off group only*' within Rawls's work (Sen, 1992: p. 146), that the main issue of contention for Sen in Rawls's political conception of justice is Rawls's choice of primary goods as the informational basis on which to make judgements of justice. That is, it is my belief that Sen is not totally opposed to the utilization of the 'Difference Principle' as a guide to action (the evaluative-judgement aspect) but, rather, contends that primary goods constitute an inadequate informational base (Sen, 1992: p. 81) off which one chooses to make evaluative judgements of justice.

While Sen (1992) acknowledges that

*'Rawls's concentration on the distribution of "primary goods"<sup>1</sup> --- in his Difference Principle can be seen as a move in --- the direction of the analysis of equality and justice towards freedoms enjoyed rather than being confined to the outcomes achieved<sup>2</sup> (Sen, 1992: p. 80),*

he contends that the informational base within Rawls's Difference Principle is *inadequate* for making evaluative judgements of justice because Rawls focuses on the *means to freedom* (primary goods) rather than on the *extents of freedoms* (capabilities) in a freedom-oriented assessment of justice (Sen, 1992: p. 81).

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<sup>1</sup> Rawls (1993: p. 181) states: '*The basic list of primary goods (to which we may add should it prove necessary) has five headings as follows: (a) basic rights and liberties, also given by a list; (b) freedom of movement and free choice of occupation against a background of diverse opportunities; (c) powers and prerogatives of offices and positions of responsibility in the political and economic institutions of the basic structure [see page 174 of Chapter Eight for Rawls's definition of 'basic structure']; (d) income and wealth; and finally, (e) the social bases of self-respect.*'

<sup>2</sup> Sen (1992) distinguishes between '*actual achievement*' and '*freedom to achieve*': '*Achievement is concerned with what we manage to accomplish, and freedom (to achieve) with the real opportunity that we have to accomplish what we value*' (Sen, 1992: p. 31).



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Sen (1992) defines capability as

*'a set of vectors of functionings (beings and doings), reflecting the person's freedom to lead one type of life or another' (Sen, 1992: p. 40).*

The crux of Sen's criticism regarding the 'inadequacy' of the informational basis in Rawls's political conception of justice is that

*'Capability represents freedom, whereas primary goods tell us only about the means to freedom, with an interpersonally variable relation between the means and the actual freedom to achieve' (Sen, 1992: p. 84)*

Rawls expresses it thus:

*'Sen has stressed the importance of variations among people in their basic capabilities and therefore in their ability to use primary goods to attain their aims' (Rawls, 1993: p. 183).*

The *central question* is whether an index of primary goods (as an informational base on which to make evaluative judgements of justice) as proposed by Rawls can be sufficiently flexible to be just or fair (Rawls, 1993: p. 185) where there are inequalities in persons' abilities to convert primary goods into freedoms<sup>1</sup>?

Before looking at Rawls's response to the above question, it is worth noting that Sen distinguishes capability - representing freedom actually enjoyed - from (i) primary goods (and other resources) and also from (ii) achievements (including combinations of functionings - beings and doings - actually enjoyed, and other realized results) [Sen, 1992: p. 81]. As *'neither primary goods, nor resources more broadly defined, can represent the capability a person actually enjoys'* (Sen, 1992: p. 82), it is Sen's contention, in a

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<sup>1</sup> Well-being freedom and agency freedom. *'The latter stands for freedom of a more general kind - the freedom to achieve whatever one's objectives are (possibly going well beyond the pursuit of one's own well-being)'* [Sen, 1992: Footnote 6, p. 40]. As Sen (1992: p. 31) makes an important distinction between (a) achievement and (b) freedom to achieve [Footnote 2 on previous page], I feel it is important to state that well-being achievement and agency achievement (Sen, 1992: p. 56) are two significant notions along with well-being freedom and agency freedom in Sen's work.

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freedom-oriented assessment of justice, that capabilities provide a more accurate way (and a more adequate informational basis) than primary goods for examining the distributive issue (Sen, 1992: p. 86).

Rawls (1993) states that he has assumed throughout his theory

*'that while citizens do not have equal capacities, they do have, at least to a minimum degree, the moral, intellectual, and physical capacities that enable them to be fully cooperating members of society over a complete life'* (Rawls, 1993: p. 183).

Although Rawls agrees with Sen

*'that basic capabilities are of the first importance and that the use of primary goods is always to be assessed in the light of assumptions about those capabilities'* (Rawls, 1993: p. 183),

it seems to me that the crux of contention between Rawls and Sen in the present discussion is that they hold dichotomous viewpoints regarding *'assumptions about those capabilities'*: Rawls assumes that citizens have capabilities, at least to a minimum degree, to enable them to be fully cooperating members of society over a life, while Sen believes that inequalities within the realm of persons' capabilities render primary goods inadequate as an informational basis on which to make evaluative judgements of justice within Rawls's political conception of justice.

Stating the above *central question* (page 201) in another way, Rawls asks

*'whether a variation (in capability) places people above or below the line: that is, whether it leaves them with more or less than the minimum essential capacities required to be a normal cooperating member of society'?* (Rawls, 1993: p. 183).

Clearly, if variations in capabilities are taken into account and people have at least the minimum essential capacities or can be restored to those minima from within the political conception of justice, then Rawls can rightfully claim that primary goods constitute an

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adequate informational base for making evaluative judgements of justice when enacting the Difference Principle.

Rawls identifies four main kinds of variations<sup>1</sup> and argues that the account of primary goods seems adequate for all cases, except possibly for the case which covers instances of illness and accident [case (b) in Footnote 1 below] where variations may place citizens below the line (Rawls, 1993: pp. 184-186). Rawls contends:

*For this case, Sen forcefully raises the question whether an index of primary goods can be sufficiently flexible to be just or fair. I cannot pursue the matter here and simply state the conjecture that by taking advantage of the information that becomes available at the legislative stage, a sufficiently flexible index can be devised in that it gives judgements as just or fair as those of any political conception we can work out. Keep in mind that, as Sen urges, any such index will consider basic capabilities, and its aim will be to restore citizens to their proper role as normal cooperating members of society. (Rawls, 1993: pp. 185-186)*

I am taking ‘conjecture’ to mean ‘the formation of conclusions from incomplete evidence’. Clearly, one can argue, and I’ve no doubt Rawls recognises, that more than ‘conjecture’ is needed to more fully justify the above conclusion that ‘*a sufficiently flexible index* (of primary goods) *can be devised*’ for coping satisfactorily with ‘case (b)’ variations where citizens may be placed ‘*below the line*’.

It is precisely at this point of apparent ‘weakness’ in Rawls’s argument that I introduce the notions of ‘*Double Dilemma*’ and ‘*Complexity*’.

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<sup>1</sup> The four main kinds of variations are: (a) variations in moral and intellectual capacities and skills; (b) variations in physical capacities and skills, including the effects of illness and accident on natural abilities; (c) variations in citizens’ conceptions of the good (the fact of reasonable pluralism); and (d) variations in tastes and preferences (Rawls, 1993: p. 184).

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#### *Double Dilemma*

On one level, my dilemma is a dilemma of logic in choosing between Rawls's and Sen's arguments<sup>1</sup>. On another level, one could also ask, need the choice between Rawls and Sen necessarily be an 'either-or' choice, insofar as I have utilised the Difference Principle in my own theory construction and practice? Regarding the latter dilemma, what were the informational bases on which I exercised 'a preferential option for the most disadvantaged' students in my four studies of singularities - '*primary goods*' or '*capabilities*' or both?

It is to this '*Double Dilemma*' that I now turn my attention. And it is within the first dilemma that the notion of '*Complexity*' arises for me. This is not to imply that my second dilemma is without complexity.

#### *Dilemma One and Complexity*

I therefore wish to address Hugh Lauder's question, '*Which one has the more defensible position? Rawls or Sen?*' [email, July 3rd, 1998]. While I have referred to a '*point of apparent "weakness" in Rawls's argument*' [page 203], I believe this, in itself, is insufficient evidence for rejecting Rawls's idea that 'primary goods' constitute an *adequate* informational base for making evaluative judgements of justice when enacting the Difference Principle. The situation is much more complex than suggesting that an informational basis is *inadequate* for making evaluative judgements of justice merely because Rawls (1993: p. 185) writes, '*I cannot pursue the matter here and simply state the conjecture --- society*' [page 203].

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<sup>1</sup> (a) If 'primary goods' then 'primary goods constitute an *adequate* informational basis for making evaluative judgements of justice' VERSUS (b) If 'capabilities' then 'capabilities constitute an *adequate* informational basis for making evaluative judgements of justice'.

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The following are some of the complexities I have in mind:

Firstly, Rawls's '*conjecture*' [page 203] is highly consistent with the '*reflective equilibrium*'<sup>1</sup> approach that he has used in *A Theory of Justice* (Rawls, 1971: pp. 20-21) where that equilibrium is not necessarily stable and '*particular cases may lead us to revise our judgements*' thereby creating a new reflective equilibrium. In fairness to Rawls, he has somewhat revised the two principles of justice between 1971 and 1993 [Footnote 1, page 199] but this is not the kind of revision I have in mind here. Rather, I am thinking of a revision of the informational base (which is also a matter of considered judgement) informing the two principles of justice. Specifically, the revised judgements for 'case (b)' variations [Footnote 1, page 203] within the '*conjecture*' relate to changes in the content of primary goods rather than to a revision of principles; that is, on a more fine-tuned point of consistency, these kinds of judgements are consistent with Rawls's statement that '*we may add should it prove necessary*' to the '*basic list of primary goods*' [Footnote 1, page 200].

Secondly, although Rawls is engaged in a metatheoretical<sup>2</sup> construction, there is a striking intellectual humility to the range of claims he makes for his political conception of justice, especially in his acknowledgement that justice as fairness does not cover all cases:

*With regard to the problems on which justice as fairness may fail, there are several possibilities. One is that the idea of political justice does not cover everything, nor should we expect it to. Or the problem may indeed be one of political justice but justice as fairness is not correct in this case, however well it may do for other cases. How deep a fault this is must wait until the case itself can be examined. Perhaps we simply lack the ingenuity to see how the extension may proceed. In any case, we should not expect justice as fairness, or any account of justice, to cover all cases of right and wrong. Political justice needs always to be complemented by other virtues. (Rawls, 1993: p. 21)*

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<sup>1</sup> 'The process of mutual adjustment of principles and considered judgements' (Rawls, 1971: Footnote 7, p. 20).

<sup>2</sup> According to Rawls (1997: p. 614), *A Theory of Justice* [1971] presents 'justice as fairness' as 'a comprehensive liberal doctrine — in which all the members of its well-ordered society affirm that same doctrine', but in *Political Liberalism* [1993], where the notion of 'reasonable pluralism' is proffered, the 'political conceptions are seen as both liberal and self-standing and not as comprehensive'.

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Perhaps it is possible that Rawls's political conception of justice does not cover the cases for people who fail, through illness and/or accident, to have the minimum capacities to be '*normal and fully cooperating members of society*' and who subsequently can't be restored by '*normal health care*'<sup>1</sup> to those minimum capacities - such cases would constitute a particular subset of 'case (b)' variations.

The third complexity is that, for Rawls, '*the fundamental question*' of political justice is:

*what is the most appropriate conception of justice for specifying the terms of social cooperation between citizens regarded as free and equal, and as normal and fully cooperating members of society over a complete life?* (Rawls, 1993: p. 20).

That is, there is the assumption within Rawls's '*fundamental question*' that persons as citizens have all the capacities that enable them to be cooperating members of society; Rawls states that this is done '*to achieve a clear and uncluttered view of what --- is the fundamental question of political justice*' (Rawls, 1993: p. 20). Clearly, Rawls is engaged in ideal theory construction and, since 1971, has had no illusions about the principles for the basic structure<sup>2</sup> being satisfactory for all nonideal cases:

*The point to keep in mind is that the conception of justice for the basic structure is worth having for its own sake. It should not be dismissed because its principles are not everywhere satisfactory.* (Rawls, 1971: p. 9)

The fourth complexity relates to '*variations in moral and intellectual capacities and skills*' ['case (a)' variations - Footnote 1, page 203] and is not a '*below the line*' problem [pp. 202-203] while the above three complexities relate to '*below the line*' situations within '*variations in physical capacities and skills, including the effects of illness and accident on natural abilities*' ['case (b)' variations]. According to Sen (1992: p. 145),

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<sup>1</sup> See Rawls (1993: p. 21).

<sup>2</sup> The basic structure of society is: '*the way in which the major social institutions distribute fundamental rights and duties and determine the division of advantages from social cooperation*' (Rawls, 1971: p. 7). By major institutions Rawls means '*the political constitution and the principal economic and social arrangements*' (Ibid.). To my mind, schools and schooling constitute a particular constellation of social arrangements.

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Rawls argues that when individuals differ in '*moral and intellectual capacities and skills*', there is nothing unfair or unjust in people with greater skills occupying influential positions and offices. Sen agrees that

*'there may be no injustice in having a selection system for offices and positions of responsibility that favours the more skilled'* (Sen, 1992: p. 145).

So, there is agreement between Rawls and Sen in connection with this social arrangement. However, while Sen justifies, through an appeal to efficiency considerations, inequalities in capabilities and powers that people would end up having in such a social arrangement, he criticises Rawls's approach for not recording these inequalities (Sen, 1992: p. 147) and contends that

*'the use (Rawls) can make of efficiency considerations is somewhat limited by the insistence on the extremism of giving total priority to the interests of the worse-off group only'* (Sen, 1992: p. 146).

The fact that Rawls has stated that '*political justice needs always to be complemented by other virtues*' (Rawls, 1993: p. 21) indicates to me that Rawls's '*maximin formula*' (Sen, 1992: p. 146) [ '*maximize the smallest portion*' (Ricoeur, 1991: p. 34)] - a crucial central point of appeal for me in Rawls's work - can still be given priority over the principle of efficiency and that some of Sen's understandings based on the virtue of efficiency can complement understandings based on Rawls's notion of justice as fairness without usurping the positive radical predisposition to live out 'a preferential option for the most disadvantaged' within the Second Principle of justice.

While I believe that Sen has eminently enhanced Rawls's notion of freedom and that capabilities have an important role to play in evaluative judgements of justice, the above complexities, in a probabilistic manner, help consolidate my inclination to accept, and, particularly, my refusal to reject<sup>1</sup>, Rawls's notion that 'primary goods' can constitute an

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<sup>1</sup> Despite, especially, the '*point of apparent "weakness" in Rawls's argument*' mentioned on page 203.

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*adequate* ‘informational basis’ for making evaluative judgements of justice when enacting the Difference Principle within the Second Principle of Rawls’s political conception of justice.

Having detailed four complexities within the first dilemma, I now wish to look at the second dilemma.

#### *Dilemma Two*

*On another level, one could also ask, need the choice between Rawls and Sen necessarily be an ‘either-or’ choice, insofar as I have utilised the Difference Principle in my own theory construction and practice? [page 204]*

As noted earlier [page 204], the key question in relation to this dilemma is

*‘What were the informational bases on which I exercised a preferential option for the most disadvantaged students in my four studies of singularities?’*

My main long-term aim for the sixth form students (17-18 year-old students) throughout the singularity studies was to help some of the most ‘disadvantaged’ students (in terms of results, aptitude, and interest) to achieve good results in their Leaving Certificate tests in chemistry and mathematics thereby helping to create greater equality of educational opportunity for gaining access to courses in further education. As this central long-term aim (within a year) was in the direction of equality of opportunity for my sixth form students, I believe that, pragmatically, I was much more focused on students’ future achievements rather than students’ future freedoms to achieve<sup>1</sup>. Further, as one of my central questions was, *‘How can I help you to improve your learning and contribute to your educational development?’*, there was an inherent assumption that my students had the basic capacities needed to improve their work. That is, I was making assumptions about the students’ *potential* capabilities rather than making considered judgements about

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<sup>1</sup> Footnote 2, page 200, gives Sen’s distinction between ‘actual achievement’ and ‘freedom to achieve’.



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the students' *actual* capabilities (in Sen's sense of the term). Therefore, unlike Sen, and like Rawls, I was focusing more on the *means* of freedoms (i.e. equality of educational opportunity) rather than on the *extents* of freedoms (Sen, 1992: p. xi).

Additionally, as none of the sixth form students in the four studies of singularities had 'case (b)' variations<sup>1</sup> which placed students '*below the line*' of having '*the minimum essential capacities required to be normal cooperating members of society*', I believe I have justified that 'primary goods' constituted an informational basis and, in particular, an *adequate* informational basis for significant evaluative-judgement-of-justice 'moments' within my singularity studies when I was attempting to 'exercise a preferential option for the most disadvantaged' sixth form (17-18 year-old) students.

I believe the above arguments, which support Rawls's work, help bolster my claims within the summary of some of my theory construction around social justice stated at the beginning of this chapter [page 198].

Most of the above arguments centre around the issue of whether or not 'primary goods' constitute an *adequate* informational base for making evaluative judgements of justice when enacting the Difference Principle. However, it is worth reiterating that the key attraction, for me, within Rawls's General Conception of justice, is the *value* of '*maximizing the smallest portion*' (Ricoeur, 1991: p. 34), because of its high level of resonance with the *value* of 'exercising a preferential option for the most disadvantaged' within liberation theology [page 184].

Ricoeur (1991) claims that the '*maximin formula*' (Sen, 1992: p. 146), '*maximize the smallest portion*' (Ricoeur, 1991: p. 36), within the Difference Principle saves Rawls's second principle of justice from falling into a subtle form of utilitarianism, because the value of maximizing the smallest portion has a '*secret kinship with the commandment to love*' [page 184].

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<sup>1</sup> Footnote 1, page 203.

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It seems to me that Sen's fuller treatment of efficiency considerations [page 207] could significantly attenuate *'the extremism'* of the maximin formula, thereby weakening the *'secret kinship with the commandment to love'* (noted by Ricoeur) within Rawls's second principle of justice.

A trade-off seriously weakening an inclination to action based on a *'logic of superabundance'* in favour of strengthening an inclination to action based on a *'logic of equivalence'* with the concomitant possibility of a perverse interpretation of the latter as expressed in the formula, *'I give in order that you will give'* (Ricoeur, 1991: p. 36), especially if that trade-off is *'at the price of the sacrifice of a small number'* (Ibid.) who are the most disadvantaged, is, at the very least, in my view, worthy of serious interrogation.

Therefore, on balance, insofar as I have drawn on Rawls's work in my theorising about engaging in more socially just actions in the classroom in the four singularity studies, all of the above arguments contribute to my inclination to accept Rawls's notion of the *'maximin formula'* (Sen, 1992: p. 146) within the Difference Principle and also to accept the notion that 'primary goods' constituted an *adequate* informational basis for making evaluative judgements of justice when 'exercising a preferential option for the most disadvantaged' student(s) at significant 'moments' in my four studies of singularities.

### Post Scriptum — Tuesday, December 15th, 1998

Howe (1995) states that a *'basic criticism'* of the application of the Difference Principle within Rawls's liberal-egalitarian approach to justice is that it is:

*'conceived so as to require little or no input from those most affected. In this it is profoundly undemocratic, for it assumes that the social goods to be distributed, as well as the procedures by which this is to occur, are uncontroverted. In fact they reflect the interests of those who have been and continue to be in charge. (Howe, 1995: p. 348)*

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To this criticism, Elliott (1998) counters:

*Rawls linked his principle of difference with that of fraternity and the idea of equality of esteem for the individual as a morally autonomous person. In this respect, - [the above] interpretation of the liberal-egalitarian theory of justice --- appears to dissociate a concern for redressing disadvantage from the need of - people to develop as morally autonomous persons, the foundation of their self-esteem and self-respect. (Elliott, 1998: p. 120)*

Whilst I acknowledge that there are many other criticisms of Rawls's theory of justice, I yet again note that centrally it is the '*maximin formula*' (Sen, 1992: p. 146) within Rawls's Second Principle of Justice that appeals to me because of its high resonance with the notion of exercising a preferential option for the most 'disadvantaged'. Finally, I think it is important to recognize that Sen (1992), despite the above debate, graciously and humbly acknowledges:

*my greatest intellectual debt is undoubtedly to John Rawls. I am led by his reasoning over quite a bit of territory, and even when I go in a different direction (e.g. focusing more on the extents of freedoms, rather than on the means - what Rawls calls the 'primary goods'), that decision is, to a considerable extent, based on an explicit critique of Rawls's theory. (Sen, 1992: p. xi)*

## 2. Structuration and the Duality of Structure

### *Challenge Two*

**Monday, July 20th, 1998**

In my conversation with Hugh Lauder on **Tuesday, June 23rd, 1998**, Hugh claimed that there was some ‘flag waving’ in my references to other writers. I am taking ‘flag waving’ to mean drawing on some references and their content without engaging in a sufficiently critical manner with that content. Additionally, it seems to me that the term ‘flag waving’ also carries the connotation that the writer of the thesis is almost *shouting*, ‘I have read this!’, and that such a reading, in itself, constitutes a support for the writer’s arguments! Hugh cited my treatment of Giddens’s notion of ‘structuration’ as one example.

The following is an excerpt from my email response to Hugh Lauder on **Thursday, July 2nd, 1998**:

*I know Giddens is only one example [of my ‘flag waving’] but I have more of his writings now and will be going to him directly and not only through [the work of] John Elliott. I will explain the meaning of ‘structuration’ more fully and will also more fully justify my utilization of the term.*

One reason why Giddens’s notion of ‘structuration’ is highly significant for me is that it can help me to develop further a more inclusive notion of social justice than is sometimes found in the literature [pp. 192-197], and, in particular, because such an extended notion of social justice can include, and does not exclude, the enactment of, what I regard as, more socially just actions in the classroom within the contexts of my four studies of singularities (1994, 1995, 1996, and 1997).

However, the main reason why I have drawn on Giddens’s work is that his theory of structuration can help ‘*dissolve the structure/agency dichotomy*’ [page 197] which is often

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part of a 'critical paradigm' rhetoric that strongly accentuates structure as 'constraint', thereby, perhaps inadvertently, theorising individual agents into discursive and action positions of greater weakness than is necessary. In Giddens's theory of structuration '*structure is both enabling and constraining*' (Giddens, 1979: p. 69) and structure exists only as '*structural properties*' [more correctly, '*structuring properties*' (Ibid: p. 64)] - rules and resources<sup>1</sup>; **structuration** means '*conditions governing the continuity or transformation of "structural properties"*' (Giddens, 1979: p. 66).

A key concept in understanding 'structuration', is **the duality of structure**

*which relates to the fundamentally recursive character of social life, and expresses the mutual dependence of structure and agency. By the duality of structure (Giddens) mean(s) that the structural properties of social systems are both the medium (the means) and the outcome (the ends) of the practices that constitute those systems.* (Giddens, 1979: p. 69)

*The basic domain of study of the social sciences, according to the theory of structuration, is neither the experience of the individual actor, nor the existence of any form of societal totality, but social practices ordered across space and time. — In and through the activities agents reproduce the conditions that make these activities possible.* (Giddens, 1984: p. 89)

The gift of agency proffered by Giddens's theory of structuration, in my view, is that, not alone can agents *reproduce* conditions that help shape activities, but that agents also have the power to *transform* those conditions, thereby leading potentially to different constellations of social practices. Admittedly, in Giddens's theory of structuration, there is a ready recognition that '*unacknowledged conditions of action*' and '*unintended consequences of action*' also play their parts in shaping present and future social practices (Giddens, 1979: p. 56; Giddens, 1984: p. 92). Nevertheless, Giddens's *theory of structuration*, which includes the notion of *the duality of structure*, does hold out some genuine hope for the possibility of individual agents, alone and together, *transforming* dehumanising social practices into more human social practices. Most pertinently, some of Giddens's work helps provide me with a strengthened conceptual vocabulary for

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<sup>1</sup> See page 196.

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(i) giving greater credence to the notion of constraining/enabling aspects of structure and for (ii) gaining a greater appreciation of the exciting possibility of students and teachers, as individual agents, acting together and alone, learning to overcome structural injustices within social practices in the classroom. Some significant 'moments' in my four singularity studies within this thesis [pp. 157-172] constitute an exemplar for the latter case. It is specifically and practically from within such a knowledge claim that some of Giddens's work has retrospectively nurtured my understandings and judgements regarding social justice and has also helped me to further develop a more inclusive notion of social justice than is sometimes found in educational research literature.

#### Post Scriptum --- Tuesday, December 15th, 1998

I fully appreciate that there are plenty of criticisms of Giddens's work; for example, Tucker (1998) notes:

*Giddens is accused of having an ahistorical, asocial, and simplistic view of the individual, who has an exaggerated aptitude to remake the world after his/her own imagination.* (Tucker, 1998: p. 6)

However, it is important to recognise that Giddens (1993) has stated:

*I should reaffirm that the duality of structure 'accounts for' nothing. It has explanatory value only when we consider real historical situations of some sort.* (Giddens, 1993: p. 6)

While I don't necessarily agree with everything that Giddens writes, for me, there is a degree of justified refuge and realistic hope in the possibility of transformation, however slight, within Giddens's notions of structuration and the duality of structure:

*The reproduction/transformation of globalizing systems is implicated in a whole variety of day-to-day decisions and acts.* (Giddens, 1993: p. 8)

As an example, Giddens notes that

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*'local purchasing decisions affect, and serve to constitute, economic orders which in turn act back upon subsequent decisions'* (Giddens, 1993: p. 8).

In short, I contend that I, as a teacher, have the capacity to initiate changes (however slight) in the social practices<sup>1</sup> and cultural climate of my classroom for the better. I also recognize that there are certain external constraints over which I have no control.

In Chapter Ten I draw out, what are for me, significant claims and implications associated with the issue of more socially just actions in the classroom. I also further develop my educational theory around social justice.

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<sup>1</sup> Giddens's work and the notion of '*social practices*', along with the possibility of '*transformation*', are further addressed in Chapter Ten (pp. 220-225).

## Chapter Ten: Reflecting Further on More Socially Just Actions in the Classroom

Because I consider the question, 'How can love enable justice to see rightly in my practice?', to be perhaps the most important central value-question for me in my thesis [pp. 179-180], and because I think there is a reasonable degree of complexity involved in my dialogic-coming-to-know work in this arena, I believe the following five points may help clarify the sources of the different contributions to my present theory construction in relation to this question:

1. I have shown [pp. 157-172] how '*exercising a preferential option for the most disadvantaged*' students has been a guiding principle at significant moments in my four singularity studies (1994 - 1997). This guiding principle from liberation theology has been part of my consciousness since the mid-1970s when I taught for about ten months on Vancouver Island, British Columbia, Canada.
2. I have noted [page 177] the high degree of resonance, from my viewpoint, between the value of '*exercising a preferential option for the most disadvantaged*' students and the value of producing '*the greatest benefit of the least advantaged*' within Rawls's Second Principle of Justice (Rawls, 1971: p. 302 and Rawls, 1993: p. 6).

After a brief discussion with Morwenna Griffiths at the BERA Conference in Belfast in August 1998 when Morwenna mentioned the term '*calculus*' in relation to Rawls's Second Principle of Justice, I believe it is worth stating that my noting of the above '*high degree of resonance*' does not mean that I am adopting Rawls's meta-theoretical social justice construct or '*calculus*', but, rather, that I prize the *value* of giving preferential treatment to the 'weakest' within the '*maximin formula*'<sup>1</sup> (Sen, 1992: p.

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<sup>1</sup> Ricoeur (1991: p. 34) uses the phrase '*maximize the smallest portion*' when referring to Rawls's Second Principle of Justice.



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146) of Rawls's Second Principle of Justice. It is also worth stressing here is that I am not creating or promulgating a meta-narrative of social justice in my own educational action research theory construction.

3. From Catholic theology's statements [page 179] that '*there is a relation between love and justice in resolving conflicts of rights*' and that '*love enables justice to see rightly*' (Civile, 1981: p. 300), I justifiably asked an important central question in my thesis, '**How can love enable justice to see rightly in my practice?**'.
4. On this matter, Ricoeur's essay on 'Love and justice' (Ricoeur, 1991: pp. 23-39) has helped me enormously to more fully understand the dialectic between love and justice, the dialectical tension between a logic of superabundance and a perverse interpretation of a logic of equivalence being of particular central importance [page 183]. To me, a logic of equivalence has a close tie with the notion of commutative justice, whereas a logic of superabundance has a closer tie with a Rawlsian liberal-egalitarian approach to distributive justice. Ricoeur (1991: p. 36) has discerned this latter connection within Rawls's work [page 184].
5. Whilst Ricoeur (1991: pp. 23-39) focuses on the rule of love and the logic of superabundance within particular scriptural metaphors in his 'Love and justice' essay<sup>1</sup>, I have shown [pp. 186-189] that the logic of superabundance inspiring my actions/attitudes at particular moments in my work can be extended to include poetic metaphors in general, thereby extending my theory of active justice.

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<sup>1</sup> See Footnote 1, page 187.

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The logical (rather than sequential) order in the above five points of my narrative brings to mind a comment Ricoeur made to Kearney in Paris in 1981 when discussing *'The Creativity of Language'*:

*There is always more order in what we narrate than in what we have actually already lived; and this narrative excess (surcroît) of order, coherence and unity, is a prime example of the creative power of narration. (Ricoeur, 1981 in Kearney, 1984: p. 22)*

One reason for the above order in my narrative is to help me clearly articulate my claims relating to the question *'How can love enable justice to see rightly in my practice?'* within and through my singularity studies. The following are my central claims to knowledge relating to my engagement in more socially just actions in the classroom during the 1994, 1995, 1996, and 1997 singularity studies:

**I claim that I acted in a more socially just manner in the classroom during the 1994, 1995, 1996, and 1997 singularity studies and that the sixth form students' improved grades in tests and self-ratings for learning, which accompanied the process of engaging in more socially just actions in the classroom, act as indicators of improved learning for the majority of the sixth form students in chemistry (1994 and 1996) and mathematics (1995 and 1997) during each of the four singularity studies. [page 172, pp. 157-172, and pages 316, 332, and 345 of the Appendices]**

**I claim that when acting in a more socially just manner in the classroom during the 1994, 1995, 1996, and 1997 singularity studies, I exercised a preferential option for the most disadvantaged students at significant moments in the four singularity studies and *'- at precisely such times of self-forgetfulness, - "love enabled justice to see rightly" in my teaching and educational action research practices in that my inclination to "Give because it has been given you" - a logic of superabundance - won out over my inclination to "I give in order that you will give" - a perverse interpretation of a logic of equivalence (Ricoeur, 1991: pp. 35-36)'. [pp. 186-189 and pp. 173-189]***

Another reason for the above order in my narrative, and an important implication of my action research enquiry, has to do with creating a sense of vision for my future teaching and educational action research practices.

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### 1. Three Implications

It is my belief that the narrative order within the above claims contributes to the clarity of my vision for acting in a more socially just manner in my practice. Also of relevance, and strongly resonant with the notion of narrative order creating a clearer sense of vision for future (and present) practices, is Ricoeur's compelling claim that

*'narration preserves the meaning that is behind us so that we can have meaning before us'*<sup>1</sup> (Ricoeur, 1981 in Kearney, 1984: p. 22).

Another implication relating to the above [point 5, page 217] has been mentioned earlier in the context of gaining greater recognition for poetic ways of understanding in educational action research and educational research [page 149].

A third potential implication, which has also been mentioned earlier [page 188], draws me to the edge of the time-and-context boundary of my singularity study enquiry and touches upon the potential transferability, relatability, and generalisability of the second claim above [page 218].

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<sup>1</sup> I am taking *'before us'* to mean now and in the future.

## 2. Specific Contextual Social Practices

I believe it is worth stressing, at this juncture, that *'eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities'* during the 1994, 1995, and 1996 singularity studies constitute specific classroom social practices for the sixth form students and me in my educational action research enquiry. Another point of theoretical consistency regarding the central importance of social practices in my work is the strong emphasis that I place on social interaction and on the work of Vygotsky in my 1997 singularity study [Chapter Eleven].

Further, as a third point of theoretical consistency in my thesis in relation to social practices, I believe the following two quotes both suggest the inseparability of means and ends in realizing educational values which can be embodied in social practices in education:

*By the duality of structure (Giddens) mean(s) that the structural properties [more correctly, 'structuring properties'<sup>1</sup>] (rules and resources) of social systems are both the medium (the means) and the outcome (the ends) of the practices that constitute those systems. (Giddens, 1979: p. 69) [page 213]*

*moral values are fundamentally defined in and through the actions we undertake to realise them. The implication of this is that our social practices embody 'descriptions' of our values. --- Ends as values are realised in the courses of action we engage in as means. (Elliott, 1989: p. 93) [page 120]*

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<sup>1</sup> Giddens (1979: p. 64).

### 3. Three Other Implications

To my mind, the main implications to be garnered from pp. 212-215 for my practices are:

- (i) the dissolution of the structure/agency dichotomy for individual action researchers interested in, and capable of, acting in a more socially just manner in the classroom,
- (ii) the concomitant and resultant '*genuine hope (proffered) for the possibility of individual agents, alone and together, transforming dehumanising social practices into more human social practices*' in the classroom and in the school, and
- (iii) the further development of '*a more inclusive notion of social justice than is sometimes found in the literature*'.

One could possibly argue that these three implications can be inferred from Giddens's notion of structuration. There is truth in that argument. However, my argument is that some of Giddens's work has retrospectively nurtured my understandings and judgements regarding social justice within my four singularity studies and has also helped me to further develop a more inclusive notion of social justice than is sometimes found in educational research literature [page 214].

More pointedly, my fuller argument is that the above three implications flow from the following social justice statement drawn from my teaching and educational action research practices:

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**My own vision of social justice is less formally sociological and more extensive again [than Zeichner's approach (Zeichner, 1993: pp. 199-219); pages 193-194] in that I believe it is possible to engage in more socially just actions (incorporating social practices and Giddens's notion of structuration) in any intra-group or inter-group situation, or any combination thereof, where it is possible to exercise a preferential option for the most 'disadvantaged' students. The five points on pages 216-217 inform and help form the practical/value/theoretical base of 'my way of knowing' and 'my way of helping' when exercising a preferential option for the most 'disadvantaged' students.**

The last sentence in the above social justice statement prompts me to again state my overarching research question for my enquiry:

*How do I create my own educational theory in my educative relations  
as an action researcher and as a teacher?*

I'd like to also stress that the notion of '*love enabling justice to see rightly in my practice*' is still a central value within the above social justice statement.

Regarding the genuine hope (proffered) for the possibility of individual agents, alone and together, transforming dehumanising social practices into more human social practices in the classroom and in the school [point (ii) on page 221], how genuine is this hope? Or, asked as a subtle negative lead, 'How naive is this hope?'

4. Power

Giddens (1979: pp. 91-92) argues thus:

*Power --- is centrally involved with human agency; a person or party who wields power could 'have acted otherwise', and the person or party over whom power is wielded, the concept implies, would have acted otherwise if power had not been exercised. ----- Power --- concerns the capability of actors to secure outcomes where the realisation of these outcomes depends upon the agency of others. ----- Power relations - are always two-way, even if the power of one actor or party in a social relation is minimal compared to another. Power relations are relations of autonomy and dependence, but even the most autonomous agent is in some degree dependent, and the most dependent actor or party in a relationship retains some autonomy. (Giddens, 1979: pp. 91-92)*

My agreement with Giddens's argument leads me to claim that even from within a minimal degree of autonomy there is the possibility of a person acting otherwise in a discursively conscious<sup>1</sup> manner. It is precisely from within the possibility of slightly changing a social practice for the better that I claim that my hope, with whatever little it can help achieve, is genuine and certainly not naive. Nevertheless, I also believe it is important that persons with '*a minimal degree of autonomy*' are appropriately helped by others and that the state also play its part where necessary. However, my main point here is that a teacher with her/his students can help change social practices within the classroom for the better, whatever the constraints of the workplace.

At this juncture, I think it is appropriate to acknowledge that Elliott (1993: pp. 175-186) has drawn my attention to Giddens's theory of structuration which helps resolve the dualism between '*structure*' and '*agency*' (Elliott, 1993: p. 181). Indeed, Elliott builds on Giddens's theory of structuration (Somekh, 1995: p. 349). [page 196]

I also think it is important to note that, whilst Elliott builds on Giddens's theory of structuration in a general way, I build on Giddens's theory of structuration and on some of Elliott's understandings of Giddens's work within the specific context of my claim to have

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<sup>1</sup> Footnote 2, page 23.

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engaged in more socially just actions in the classroom during my 1994, 1995, 1996, and 1997 studies of singularities.

Nevertheless, returning to the notion of power, the following may infer a slight philosophical ‘oversight’ on Elliott’s behalf when interpreting Giddens’s work:

Giddens claims:

*The exercise of power is not a type of act; rather power is instantiated in action, as a regular and routine phenomenon. It is mistaken moreover to treat power itself as a resource as many theorists of power do. Resources<sup>1</sup> are the media through which power is exercised, and structures of domination reproduced — (Giddens, 1979: p. 91).*

In contrast, Elliott, who draws on Giddens’s theory of structuration, refers to ‘*power as a resource*’ when he states:

*Structures impose limits on what individuals can do, but at the same time enable them to do things. As properties of social systems they do not generate power for the system to control individuals but rather generate power as a resource for individuals to bring about certain effects in their interactions with others. (Elliott, 1993: p. 183)*

It seems to me that Elliott’s interpretation of Giddens’s work in the above quote is slightly flawed in that structuring properties in Giddens’s theory of structuration are constituted by rules and resources, and power works through the media of these rules and resources (Giddens, 1979: p. 66) rather than these media generating ‘*power as a resource*’<sup>2</sup>. While I don’t think this ‘flaw’ takes significantly from Elliott’s utilization of Giddens’s work in Elliott’s paper, I do believe it is worth being clear on Giddens’s understanding of power. I might also add that, although I have tended to talk about ‘*power relations*’ in my thesis (for example, pp. 133-135 of Chapter Six), I have also understood power in my workplace

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<sup>1</sup> Footnote 4, page 196.

<sup>2</sup> I wrote to John Elliott about this on October 15th, 1998, querying my own understanding of what he had written, and he confirmed my interpretation by email on October 18th, 1998.



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both as a personal resource and as a shared resource between persons. Nonetheless, at a deeper philosophical level, I support Giddens's view.

Focusing again on the issue of power and linking to a recent presentation of a paper by Griffiths in Belfast (August 1998), it seems to me that there is a striking resemblance between Giddens's view of power and:

*the Foucauldian analysis of power manifesting itself in the microcirculations of dominance and resistance, being constituted in the actions, procedures and bodies of specific social contexts* (Griffiths, 1998a: p. 5).

However, despite the apparent '*striking resemblance*', it seems to me that there are significant differences between Giddens's and Foucault's views of power<sup>1</sup>. For example, Giddens (1991) notes:

*The issue of the body in recent social theory is associated particularly with the name of Foucault. — Yet important though Foucault's interpretation of discipline may be, his view of the body is substantially wanting. He cannot analyse the relation between the body and agency since to all intents and purposes he equates the two. Essentially, the body plus power equals agency. But this idea will not do, and appears unsophisticated when placed alongside the standpoint developed by Merleau-Ponty, and contemporaneously by Goffman.* (Giddens, 1991: p. 57)

At this stage of my thesis and theory construction, I don't think there is a need to articulate a substantial and complex philosophical discussion on different theories of power.

Therefore, I return to my own vision of social justice stated earlier [page 222].

I believe it is important to state explicitly that this 'vision' of social justice is centrally a guide for my own practices and future teaching and in no way is intended as a meta-

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<sup>1</sup> Interestingly, I wrote these comparative reflections on Foucault's and Giddens's views of power on Thursday, October 15th, 1998 three days *before* I received John Elliott's Sunday, October 18th, 1998 email comment '*Your point makes me want to return to Foucault's concept of power and compare it with your account of Giddens's*'.

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theoretical prescription for other teachers and educational researchers. However, this is not to deny that it may be useful to some reflective practitioners, especially in regard to developing a more inclusive notion of social justice than is sometimes found in educational research literature [pp. 192-197 and page 221].

In a recent paper, Griffiths (1998b) shares her own view of social justice, which, while it curiously fails to include an overt equivalent of Rawls's Difference Principle (present within Rawls's Second Principle of Justice) - '*maximize the smallest portion*'<sup>1</sup> (Ricoeur, 1991: p. 34), eminently constitutes a much broader perspective than Weiner's 1989 approach [pp. 192-194]:

*I myself have come to a view about social justice which is as follows: social justice is a dynamic state of affairs which is good for the common interest, where that is taken to include the good of each and also the good of all, in an acknowledgement that one depends on the other. The good depends on there being a right distribution of benefits and responsibilities.* (Griffiths, 1998b: p. 302)

Griffiths (1998b), '*utilizing an iterative process of theorising in relation to specific practical circumstances and their problems*' (Griffiths, 1998b: p. 301), worked with twelve co-researchers from schools and educational support services and came up with '*a number of principles, in terms of fair schools, which were intended to be useful to senior management teams in schools*' (Griffiths, 1998b: p. 309). The following dynamic approach was taken:

*In general, the approach is based on an acceptance that discourses create meaning as well as describe or express it; and they have to create meaning within a changing discursive context.* (Griffiths, 1998b: p. 313)

Further, in relation to discourses on social justice, I support Griffiths's dialogic-coming-to-know stance within the following:

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<sup>1</sup> '*Social and economic inequalities --- are to be to the greatest benefit of the least advantaged members of society*' (Rawls, 1993: p. 6). On pp. 216-217 of this present chapter I refer to a brief discussion with Morwenna Griffiths (August 1998) on the notion of '*calculus*' within the '*maximin formula*' (Sen, 1992: p. 146) of Rawls's Difference Principle. Footnote 2, page 205, may possibly be of interest to the reader.

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*it is the argument of this article that the various discourses (with their implicit definitions) can be built on; there is no argument that can be subsumed by some 'master discourse' (Griffiths, 1998b: p. 302).*

Such a stance towards discourse, seems to be highly resonant with Winter's notion of 'collaborative resource' (Winter, 1989: p. 56) mentioned earlier [page 50]. I could really relate positively to this paper, especially to the following quote which I perceive to be an acknowledgement of the intimate relationship between theory and practice:

*It is clear enough to many of us with abstract, theoretical problems that those concerns spring from practical ones; that is, that solving them depends on keeping our link with concrete situations. It is equally clear to many of us with concrete, practical problems that they are principled concerns; that is, that the problems spring from principled perspectives and, further, that solving them should help develop new sets of principles (Griffiths, 1998b: p. 303).*

Indeed, it seems to me that the above quote also constitutes an acknowledgement that theory can grow through and from practice, a stance very much supported by my overarching research question:

*How do I create my own educational theory in my educative relations  
as an action researcher and as a teacher?*

However, despite my agreement with a lot of the content of Griffiths's paper (Griffiths, 1998b), it seems to me that Griffiths is perhaps a little too hasty, and unintentionally dismissive of the importance of 'single issue radicalism' in helping to promote human rights and social justice<sup>1</sup>, when stating the following as part of the 'Concluding that ...' paragraph of her paper:

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<sup>1</sup> For example, the work of Amnesty International in promoting the unconditional release of prisoners of conscience.

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*It is important to lose the nostalgia for the theoretical discourses of liberalism, single issue radicalism (whether of class, gender or race), and the practical discourses of equal opportunities and class war, patriarchy and white supremacy which characterise earlier decades. With them is lost a belief in the grand sweep of Enlightenment progress, in its modernist, humanist, liberal interpretation.* (Griffiths, 1998b: p. 313)

In particular, although I have noted earlier [page 193] that I see Weiner's communicated vision of 'social justice' with its predominant emphasis on gender as a limited vision, I do believe it is possible to adopt a single-issue-radicalism stance within a broader perspective of social justice than that provided by Weiner (1989: pp. 41-51). Pertinently, my point regarding Griffiths's paper is that I believe it is eminently possible to engage non-nostalgically in a single issue radicalism that is part of a wholesome perspective of social justice without being seduced by '*the grand sweep of Enlightenment progress, in its modernist, humanist, liberal interpretation*' (Griffiths, 1998b: p. 313). For example, in relation to the work of Amnesty International in promoting the unconditional release of prisoners of conscience, I would find it very difficult to believe that *every* 'postmodernist', who is also an active member of Amnesty International, refuses to support the '*single issue radicalism*' of helping to promote the unconditional release of prisoners of conscience<sup>1</sup>. I would also find it equally difficult to believe that no member of Amnesty International is a 'postmodernist'.

In Chapter Eleven I theorise off my fourth singularity study (1997). Whilst illustrating the central importance of practical action in this study, I also show that meanings from textual and social encounters<sup>2</sup> have an important part to play in my action research theory construction.

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<sup>1</sup> On the evening of the same day that I wrote this paragraph (Monday, October 19th, 1998), I attended an Amnesty International talk given by a recent prisoner of conscience from Indonesia. Wilson (his first name) spent about two and a half years in prison and eventually was in the unusual position of being forced to leave prison in August 1998, having refused amnesty from the Indonesian military regime for some time because he did not wish to be free while there were still other prisoners of conscience in prison in his own country - a powerful individual political expression of single issue radicalism!

<sup>2</sup> It may be redundant to state that, for me, practical, textual, and social encounters can overlap.

## **Chapter Eleven: A Sixth Form Student's 'Conceptual Vision' in Mathematics**

### **Considered in Relation to the Understandings of Vygotsky, Piaget, and Two of My Teaching Colleagues**

My decision to focus on one sixth form student (Hugh) and his learning in higher level mathematics was centrally based on an educational standard of judgement of wanting to act more justly in the classroom in the context of responding to the question, *'How can I help you to improve your learning and contribute to your educational development?'*

I believe I have already explained in sufficient detail my approach to social justice and to enacting a preferential option for the most 'disadvantaged' (least favoured) students [Chapter Eight]. My present primary focus is on the notion of growing to a fuller appreciation of, and a fuller understanding of, a sixth form mathematics student's conceptual vision *within* the context of acting more justly in the classroom.

The following excerpt from my fourth study of a singularity (1997) describes my response to the notion of 'conceptual vision' which was introduced into our November 1996 dialogue by Breid Carberry, a critical friend from a local girls' convent secondary school (Singularity Study Four: pp. 15-16):

#### ***Journal, November 26th, 1996***

*Breid helped me to develop a more hopeful vision regarding understanding errors that students make in mathematics. --- When a student makes a mistake it is often the case that the student's 'conceptual vision is blocked but there is a pattern to it -- something comes over'.*

*This meeting with Breid made a deep impression on me to give a little more time to:*

*attending to the 'something that comes over' from the student and identifying the pattern in what a student says or writes with a view to helping the student to unblock*

## Part Four

*their vision — often this is done by hinting at or suggesting a connection between two concepts with the purpose of building a particular conceptual structure in mathematics that has the potential to help a student to both understand and solve a problem in mathematics.*

*At the same time, after twenty years of teaching, I see myself as being quite good at discovering where a student is having difficulty in understanding mathematics. The following excerpt from my conversation with a 'critical friend' [in my 1995 study], Joe English [who observed two videos of my classroom practice], refers to my work rate and to my ability to tune in to students' conceptual structures in mathematics (Singularity Study Two: page 39):*

*Joe And they work hard as well but I think you work very hard — I've down here (Joe's notes) — your brain [I prefer the term 'mind'] works very hard when they are working because you are really getting into the map of the pupil - into the mind of the pupil when they are working at it and you are trying to see where the difficulties are - you know.*

*James I know.*

*Joe It's tough going. It can be very fatiguing. [Singularity Study Four: pp. 15-16]*

Throughout this chapter I will draw on, and debate with, understandings from Vygotsky (1896-1934) and Piaget (1896-1980)<sup>1</sup> with a view to enhancing my descriptions and explanations of my practices and understandings associated with my fourth study of a singularity, in particular, with the notion of Hugh's conceptual vision in sixth form higher level mathematics, and also with a view to creating a sense of vision for my future teaching and research practice.

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<sup>1</sup> Vygotsky, after ten years of illness with tuberculosis, died when he was 38. Piaget lived until he was 84 and clearly benefitted from the 'dramatic expansion in the field of developmental psychology' with resultant access to a vast literature on child development (Wood, 1998: p. 37-38). Piaget, whose academic roots lay in biology, 'sought to unify biology, natural science and psychology', whereas Vygotsky, whose primary academic interests lay in literature and psychology (Luria, 1978: p. 15), 'sought nothing less than a coherent theory of the humanities and social sciences' (Wood, 1998: p. 8 and p. 11). Despite challenges to his work, Piaget has secured a considerable reputation in the latter half of the twentieth century. However, in the last ten years, 'one of the most dramatic changes that has taken place in the intellectual climate of developmental psychology and educational theory has come from the impact of Vygotsky's thinking within the field' (Wood, 1998: p. 40). Indeed, Schaffer (1996: p. 251) refers to 'Vygotsky's rapid overtaking of Piaget in the citation stakes' as indicative of the growing trend among most psychologists to view the development of cognition as taking place within a social context. My own belief in, and practical experience of, a dialogic coming to know within teaching and within the four singularity studies leads me to claim that social interaction has a very significant role to play in educational development.

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In *'spend(ing) a little more time - looking for the pattern in the approach that a student has adopted in a written or oral piece of work in mathematics where the student has made one or more errors'* [Singularity Study Four: page 16] in Hugh's situation I have tried to come to a deeper understanding of what a student can do rather than over-focusing on what a student can't do. This stance was retrospectively bolstered for me when I recently read (February, 1998) that Piaget's,

*'towering contribution was to try to enter the world of the child, and understand it from the child's viewpoint'*<sup>1</sup> (Fontana, 1995: p. 61).

Despite Vygotsky's different approach to learning and development (Vygotsky, 1978: pp. 79-91) which will be discussed later, he applauded the fact that Piaget, unlike most child psychologists at the time, sought to find out what children<sup>2</sup> could do and what they actually did rather than merely setting out to discover what they could not do in comparison with adults (Wood, 1998: p. 29).

In further justifying my dialogue with understandings gleaned from Vygotsky's and Piaget's work, it is worth stating that in focusing on Hugh I was clearly focusing on understanding how Hugh's mind worked in mathematics within my central question,

*'In helping [Hugh] to improve [his] learning in mathematics, how do I gain a fuller understanding of how [Hugh] come[s] to understand a particular content area in mathematics?'* [page 166].

The particular content area was maximum and minimum calculus problems in higher level leaving certificate mathematics.

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<sup>1</sup> For my context, I replace the word 'child' with 'student'.

<sup>2</sup> Again, for my purposes, I substitute the word 'students' for 'children' as my sixth form students are 17-18 year-old adolescents in their final year of secondary schooling.

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The following excerpt from a conversation (January 23rd, 1997) with Ann Carroll [AC], a critical friend from the same local girls' convent secondary school as Breid, further confirms that we were focusing overtly on understanding Hugh's mind during the 1997 enquiry<sup>1</sup> (Singularity Study Four: page 41):

*JF I wonder should we interview Hugh on his own.*

*AC It might be a good idea. I think he clammed up today ---- because I'd love to feel and get -- the idea what's going through his mind. We're talking about his mind all the time and how he pictures. He'll never be able to generate the function unless he's able to picture it and we want to see what's in his mind and if we can figure out what difficulties he has picturing it - the game is won - You see I imagine by this time next week that Paul and Felim are still going to have no problems.*

Admittedly, Piaget was a *child* psychologist; however, regarding formal operations of the mind, *'there is now general consensus that even by the age of 16 (Hugh was 17) only a minority of adolescents have attained the most advanced levels'* (Fontana, 1995: p. 61). This reported 'general consensus'<sup>2</sup> along with the fact that Piaget focused on descriptions of patterns of cognitive development with little explicit reference to the social context of that development<sup>3</sup> (Crawford, 1995: p. 240) while, in contrast, Vygotsky saw person-to-person social interaction as having a key role to play in the social construction of mind (Wood, 1998: p. 41) import, in my view, both the necessity and justice of Hugh's story entering into dialogue with some of the understandings from the constructivism of Piaget and the social constructivism of Vygotsky as a means to enhancing my descriptions and explanations of Hugh's conceptual vision in my fourth study of a singularity, thereby helping me in my present task of theory construction. At this stage, I think it is important

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<sup>1</sup> I am proud to include Ann in the 'we' as the two of us met nine times in evenings during the 1996/1997 enquiry, each evening meeting lasting about an hour (Singularity Study Four: p. 14). This *critical-friendship* support was crucial for me in my fourth study of a singularity.

<sup>2</sup> The juxtaposed terms in 'general consensus' infer that the belief, in all likelihood, is contested by some developmental psychologists. However, I believe my arguments for entering into dialogue with the work of Vygotsky and Piaget are not weakened by such an inference.

<sup>3</sup> Piaget does focus on a child's active engagement with the environment, but *'the nature of that environment in (Piaget's) account is conceived very largely in asocial terms'* (Schaffer, 1996: p. 252).



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to reiterate that my conversation with Breid encouraged me to come to a fuller understanding of Hugh's 'frame of reference' in mathematics [pp. 229-230].

Consistent with the Republic of Ireland DES's adaptation of Bloom's taxonomy to suit mathematics education as expressed in their statement of 'student outcome' categories which are intended, among other things, to facilitate the design of suitably structured examination questions (Mathematics Syllabus, 1994<sup>1</sup>: p. 3), I had a particular interest in Hugh's relational understanding (knowing 'why') and in his ability to link concepts in building conceptual structures that would help him to both understand and solve maximum and minimum differential calculus problems in higher level leaving certificate mathematics.

### *Problem Identification*

After meeting Breid and before going on to study maximum and minimum problems with the sixth form mathematics students, I focused in on Hugh's understandings in other questions in mathematics while also attempting to identify a pattern to his errors with a view to understanding how Hugh's conceptual vision was blocked. In this way, I would hopefully be better able to help Hugh to 'unblock' his conceptual vision for particular mathematics problems.

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<sup>1</sup> The new mathematics programme was first tested in 1994. Hugh sat his mathematics test in June 1997.

## Part Four

The following excerpt from Singularity Study Four (pp. 83-85) explains how three questions attempted by Hugh helped me in the task of understanding how Hugh's conceptual vision was blocked:

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### Question One

*Journal, November 27th, 1996: An example of Hugh's conceptual vision being blocked (the day after I met Breid)*

*Sixth Form Students ----- all of the students got the first question for hwk correct except FB who miscalculated  ${}^5C_4$  and all except Hugh got the second question right --- Hugh got 480 but failed to take two other possibilities into account --- the answer should have been 580. I related the omission to Hugh and he understood my explanation. Here is the homework question followed by the solution:*

*An organisation has 20 members, four of whom are doctors. In how many ways can a committee of three members be selected so as to include at least one doctor on each committee?*

*There will be one doctor AND two others OR two doctors AND one other OR three doctors on the committee. [In combination problems AND implies 'multiply' and OR implies 'add'.]*

$$\begin{aligned} &\Rightarrow {}^4C_1 \cdot {}^{16}C_2 + {}^4C_2 \cdot {}^{16}C_1 + {}^4C_3 \\ &= 4 \cdot 120 + 6 \cdot 16 + 4 \\ &= 480 + 96 + 4 \\ &= 580 \end{aligned}$$

*I think it is readily understood that Hugh omitted 'OR two doctors AND one other OR three doctors' in solving this problem and consequently calculated the solution for the case where there is only one doctor on the committee (480 possibilities) rather than at least one doctor (580 possibilities). Effectively, Hugh omitted 'at least' in his treatment of the question.*

### Question Two

*On December 3rd, 1996 (one week after my meeting with Breid Carberry) I wrote the following in my Journal:*

*Hugh had problems with Q.20 and had as answer  $3/45$  --- I was reminded of what Breid had said and I tried a little harder to understand Hugh's thinking and discovered the reasoning behind Hugh's answer ---  $1/3 \times 3/15 = 3/45$  --- Hugh wrote 15 instead of 5 and then failed to add  $2/3 \times 1/2$  --- his misunderstanding was that he thought the day had*

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*to be fine for them to win! [Again, I discussed this with Hugh and he understood his omission.]*

*I'd like to look at this question and solution:*

***If the probability of a fine day tomorrow is  $1/3$  and if it is fine, the chance of our football team winning is  $3/5$ , but otherwise it is only  $1/2$ . What is the probability of our football team winning tomorrow?***

$$\begin{aligned}\text{Prob. (win)} &= \text{Prob. (fine AND win)} + \text{Prob. (not fine AND win)} \\ &= \frac{1}{3} \cdot \frac{3}{5} + \frac{2}{3} \cdot \frac{1}{2} \\ &= \frac{3}{15} + \frac{1}{3} \\ &= \frac{3}{15} + \frac{5}{15} \\ &= \frac{8}{15}\end{aligned}$$

*Hugh calculated 'Prob. (fine AND win)' only and wrote  $1/3 \cdot 3/15$  (writing 15 instead of 5) therefore getting  $3/45$  as an answer. I believe Hugh thought it had to be fine for the team to win. A key part in solving this question is in understanding that if the probability of the day being fine is  $1/3$  then the probability of the day not being fine is  $2/3$ .*

*When reading the above section in my Journal later I wrote:*

*In recognising the pattern the conceptual vision can be 'unblocked'.*

*Regarding Breid's influence, the point I am again making is that I was encouraged to take a little more time in understanding the 'pattern' behind Hugh's errors. Further, it is worth drawing attention to the fact that Hugh on occasion failed to see the 'wider picture'*

## Question Three

### *Getting Closer to Some of Hugh's 'Problems' in Learning Mathematics*

*The following excerpt from an email to Jack Whitehead on December 11th, 1996, points to an observation regarding Hugh's learning in mathematics:*

*I can see very strong indications of Hugh lacking in relational understanding in a recent question involving permutation and combination notation. I mentioned (the error) to him and he could understand what I was saying. — James.*

*The 'recent question involving permutation and combination notation' was given in a class test on December 4th, 1996 (the day after the above question):*

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*Prove that  ${}^nP_r = (r!) {}^nC_r$ .*

*We had done this question recently in class. Here is Hugh's attempt:*

$${}^nC_r = (n!)/(r!)(n-r)! \text{ ----- (A)}$$

$${}^nP_r = (n!)/(n-r)! \text{ ----- (B)}$$

*And Hugh didn't progress any further. He failed to connect A and B and see/remember/recall that if he multiplied both sides of (A) by (r!) he would have obtained:*

$$(r!) {}^nC_r = (n!)/(n-r)! \text{ which is } = {}^nP_r$$

*Regarding Hugh's attempt at this question (and I do recognise that he remembered two formulae) and taking into account his 'blocked vision' in the questions about selecting a committee of 3 from a group of 20 and about the probability of a team winning whether the day was fine or not, I was beginning to get a sense of Hugh's difficulty in understanding mathematics: I believed it had something to do with connecting two concepts (one/more than one, fine/ not fine, A/B) at a particular stage in reading and attempting a question and thereby failing to build an appropriate conceptual structure that could help him to understand and solve a problem. [Singularity Study Four: pp. 83-85]*

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I believe Hugh's attempts in the above three questions helped me to discern an initial 'problem identification' focus. In further refining the focus I analysed the first few steps of the correct solution and then Hugh's solution to a further calculus maximum test question given on January 23rd, 1997. Here, Hugh was attempting a maximum question and was failing to connect an A and B in order to build up a function of one variable:

**Test Question:** *A cylinder has radius  $r$  metres and height  $h$  metres. The sum of the radius and the height is 2 m. Find an expression for the volume of the cylinder in terms of  $r$  only. Hence find the maximum volume of the cylinder in terms of  $\pi$ .*

$$V = \pi r^2 h \text{ ----- (A)}$$

$$r + h = 2 \Rightarrow h = 2 - r \text{ ----- (B)}$$

$$\therefore V = \pi r^2 (2 - r) \Rightarrow V = 2\pi r^2 - \pi r^3 \text{ [ connecting (A) and (B) ]}$$

## Part Four

### *Hugh's Solution to the Test Question*

$$f(x) = \pi r^2 h \text{ ----- (A) (error: not a function of } x) \text{ Step 1}$$

$$f'(x) = 2r = 0 \text{ (error) Steps 2 and 3}$$

$$r = 1/2 \text{ (error)}$$

$$f''(x) = 2 \text{ (error: should be } < 0 \text{ for maximum) Step 4}$$

$$\text{when } r = 1/2, h = 1.5$$

$$\text{because } r + h = 2 \text{ ----- (B)}$$

$$\text{Volume} = \pi (.25) (1.5) = \pi (.365)$$

The permutation/combination question and the maximum question about the cylinder both came up in conversation on January 23rd, 1997 with Ann Carroll who had a prior audiotaped conversation with Hugh, Paul, and Felim on the same day (Singularity Study Four: pp. 86-87):

*AC Paul — well thought out. He loves it. He doesn't need your help at all. — Felim - very considered answers - knows his stuff as well. — Apart from the truck what came from Hugh? I wasn't getting a feeling of what he knew. It would be at the back of my mind, 'I wonder do you understand it?' What do you think from the tape now and from what I'm saying?*

*JF Well I thought that when he said 'no problem' he was - giving an impression - that he was better able to manage it than he actually was and then - you — came back to him. You actually did give him a very gentle probe and then you could see him saying that he did have difficulty on two levels. He had difficulty - linking the square and the circle and he had difficulty realising that it was a perimeter changing into an area. (difficulty picturing it)*

*AC Yeah. Yeah.*

*JF That's the area where he had difficulty; if you remember there was one test [December 4th: pp. 235-236] of his that I corrected before where he had an A and a B but he never connected the two — the area where Hugh seems to have difficulty is connecting and it's this - relational understanding ---- you have the blocks but the cement to put them together ----*

*AC The bit is missing and you'll never get them together unless you have the cement.*

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**JF** *And I think -- when he has more time he's able to get the cement [both a 'tacit knowledge' and a 'discursively conscious' understanding and judgement on my part]*

**AC** *Yeah. Yeah.*

**JF** *because of the different rate of learning ---- What is emerging I think is that Hugh has difficulty linking things together but given time he's capable of understanding it.*

**AC** *But with the length of course and the time available Hugh - the Hughs of this world aren't given enough time to make the links and to get the practice and the confidence in the understanding and that's the difference. They are well able and in fact some of them succeed very well at university where they are able to make that bit more time available for themselves.*

Towards the end of the conversation we discussed the three students' attempts at the cylinder test question given in class earlier in the day.

**AC** *I think the two lads (Paul and Felim) understand. You'd nearly say he (Hugh) is not for the honours paper at all --- that's not honours standard --- Felim knows it and Paul knows it; I wouldn't mind the mistake he (Paul) made. And it's all about connections. He (Hugh) just did not make the connections*

**JF** *I wonder can you make a breakthrough in a person's ability to connect?*

**AC** *to get an expression in terms of  $r$  --- it gave the step to get the function [Hugh failed to connect an  $A$  and a  $B$  in order to build up a function of one variable]. I'd worry about him - certainly that's not somebody who has 'no problem' with that!*

**JF** *He had the four steps.*

**AC** *He had the four steps but he had no idea what to put in the steps, sadly, sadly, and the other two boys were grand.*

After refining the focus and the area of difficulty in maxima/minima problems for Hugh, the following statement, I believe, helps clarify the position:

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It is worth stressing that building up the function, in terms of one variable, in maximum and minimum problems is a crucial first step in understanding and solving such problems. This turned out to be our (and I include Ann here because I had a real sense of being accompanied by Ann in this enquiry) central focus in getting closer to Hugh's understanding in maximum/minimum differential calculus problems in higher level leaving certificate mathematics.

The following excerpt from a lunch-time conversation between Hugh and me on January 24th, 1997, the day after he handed in his response to the cylinder test question and the day after my above conversation with Ann, illustrates, I believe, an educational response to Hugh on my part (Singularity Study Two: pp. 45-47):

### *Getting into the Way of Thinking and Trying to Connect Concepts*

**HK** *Before I was eh I was thinking you know 'It's very hard to understand'. Now I'm just trying to get into the way of thinking.*

**JF** *Yeah.*

**HK** *It's a different kind of way of thinking to most other subjects --- and I'm trying to get into the way of thinking - that there.*

**JF** *And if I could give you a pointer. There's one thing I notice. You came back in the last day and you were doing the thing about the cylinder and - maybe because it was a new type of question - Let's say there was  $r + h = 2$ . Do you remember that question?*

**HK** *Yeah.*

**JF** *And -- what we wanted in that case rather than a function of  $x$  [page 237] -- you don't mind me talking about this?*

**HK** *No.*

**JF** *Here now okay (after getting the copy of the question) - You have the four point approach. You've a function (step 1). You get the derivative (step 2). You test the second derivative (step 4). You get the first derivative and set it equal to zero (step 3) - but I think really your problem in this question was - in building up the function (step 1) -- and it's not a function of  $x$  either, it's going to be a function of  $r$  or else a function of  $h$  (the question asked for a function of  $r$ ). Is that okay?*

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**HK** *That's where I found that's where I spent most of my time trying to get the - building up the (function).*

**JF** *Yeah. --- What I found was - I was listening to the conversation you had with Ann yesterday. I think that one area that you might look out for is that if you have some thing here and some thing over there to try and be able to connect the two together a bit more.*

**HK** *That's what I'm trying to do now.*

**JF** *Let's say, even the square and the circle or else where the sheet was flat - the way when it comes out - what does it look like - but that's a different thing, that's maybe visualising the thing. That's maybe slightly different but the thing is to be able to connect. I see a similarity between this [the previous day's test question (page 237)] and being able to connect things. What you have here. You have an  $r$  and you have a  $h$  --- so you need to be able to say  $r = 2 - h$  or rather, you want to build up a function of  $r$ ,  $h = 2 - r$ . Is that okay?*

**HK** *Yeah.*

**JF** *And then your volume - the volume was  $\pi r^2 h$  which is  $\pi r^2$  (multiplied by ) and then you put in your value for  $h$  which is*

**HK** *2 - r. Aye [breathing in at same time]. [a sign of a moment of insight I believe. I wrote out what Hugh said after he said it -  $V = \pi r^2 (2-r)$  - which is a function of one variable. **This fleeting moment of insight and the context of the social interaction within which it occurred help persuade me to further value Vygotsky's notion of 'the zone of proximal development' - the 'gap' that exists for an individual (child or adult) between what s/he is able to do alone and what s/he can achieve with help from one more knowledgeable or skilled (Wood, 1998: p. 26).** Again, similar to a theme that has occurred in my other singularity studies, I believe it is important not to overvalue the role of social interaction in learning and development to the detriment of independent learning and development, lest the former through cultural habit or inertia (in the sense of continuing to move in the same direction) nurture 'learned helplessness' (Egan, 1994: p. 80) in a particular student or group of students.]*

**JF** *Do you understand that there now?*

**HK** *Yeah. I see that there now.*

**JF** *Yeah. Yeah. So I think that's an area for you just to think about you know. In that case what you need to be able to do - you need to be able to connect that formula ( $\pi r^2 h$ ) with what you're given ( $r + h = 2$ ).*

**HK** *Yeah.*



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**JF** *And again it's to try and work in the area of connecting things. Does that make sense?*

**HK** *Aye, that's - that's what I'm trying to get*

**JF** *Yeah.*

**HK** *my way into thinking - linking the two things together. I knew that's where my problem was before [ I had also mentioned something like this to Hugh before when correcting his permutation and combination question on December 4th (pp. 235-236)].*

While acknowledging in the above that placing too much emphasis on 'social interactions' within teaching and learning could lead to a form of learned helplessness for the student, one great attraction of Vygotsky's theory<sup>1</sup>, in my view, is that it offers a way of conceptualizing individual differences in 'educability'; and in this regard it gains ground on Piaget's theory which has little or nothing to say about the issue<sup>2</sup> (Wood, 1998: p. 27).

Before returning to Hugh's particular situation, it seems to me that there are **three significant issues** worth addressing which relate directly to Vygotsky's notion of '*the zone of proximal development*' as a means to understanding individual differences in 'educability' among students. The following is Vygotsky's own definition of *the zone of proximal development*:

*It is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers* (Vygotsky, 1978: p. 86).

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<sup>1</sup> According to Wood (1998: p. 41), 'Vygotsky's perspective on human development can hardly be called a fully fledged theory'.

<sup>2</sup> See Footnote 1, page 107.

### 1. Three Significant Issues Relating to Individual Differences in Educability

As a first significant issue, I believe it is important to stress that **actual and potential levels of development correspond with intramental and intermental functioning respectively** (Wertsch and Tulviste, 1996: p. 57). I am taking what a student can do independently to reflect intramental functioning and what a student can do with the help of one more knowledgeable to reflect the student's intermental functioning. The latter, to my mind, occurs within Joint Involvement Episodes<sup>1</sup> within a student's student/teacher and student/student dialogic-coming-to-know in learning/teaching contexts.

Secondly, **the fact that the zone of proximal development can address individual differences in 'educability'**<sup>2</sup>, indicates to me that, potentially, the zone of proximal development can enhance a working notion of distributive justice where one wishes to exercise a preferential option for the most 'disadvantaged' student. Precisely the way in which it can do this is in providing a criterion for making a professional judgement regarding who is the most 'disadvantaged' student or group of students in a particular learning context. It is my belief that many experienced teachers have concrete, accurate, and intuitive notions of both their students' actual levels of development and their zones of proximal development within the learning/teaching enterprise for their particular specialist subjects<sup>3</sup>. **The student with both the lowest level of actual development and the lowest zone of proximal development in a particular content area of a subject is, to**

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<sup>1</sup> A Joint Involvement Episode is 'any encounter between two individuals in which the participants pay joint attention to, and jointly act upon, some external topic' (Schaffer, 1996: p. 253).

<sup>2</sup> To my mind, both internal and external factors interact in helping to shape individual differences.

<sup>3</sup> As Vygotsky (1978, p. 86) has stated that 'The actual developmental level characterizes mental development retrospectively, while the zone of proximal development characterizes mental development prospectively', it seems to me that this belief is shared implicitly by many people in secondary and further education in that teachers are asked to predict their students' public examination grades in the students' UCAS application forms for further education. The following provides an example of accuracy in my own case when writing up my fourth study of a singularity: on July 7th, 1997, I predicted that Felim would get a C1/B3 grade and that Paul would get a B1/A2 in the Leaving Certificate mathematics test which was held in June 1997; the results, which came out in August 1997, showed that Felim had obtained a B3 and that Paul had obtained an A2 (Singularity Study Four: page 75), confirming my sound judgement on this matter. Pertinently, in November 1996 (Singularity Study Four: page 14) I felt that Felim was in a C/B situation while Paul was in a B/A situation; however, my July 10th 1997 'prediction' was more refined.

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my mind, the most ‘disadvantaged’ student<sup>1</sup> in a particular group of students for that particular subject, and this student qualifies as the most needy candidate when enacting more socially just actions (particular social interactions) in the classroom. I believe such a working notion was tacitly and overtly operative within my first, third, and fourth singularity studies, where I purposively enacted preferential social interactions for the most ‘disadvantaged’ students; however, it is only now (Monday, May 11th, 1998) that I have articulated it in the above manner.

The third significant issue relating directly to Vygotsky’s notion of *‘the zone of proximal development’* as a means to understanding individual differences in ‘educability’ among students concerns **the interaction between learning and development** (Vygotsky, 1978: pp. 79-91). A central question in relation to my educative relationships with my students in my 1997 enquiry, which first arose in a March 10th 1995 fax from Jack Whitehead, *‘How can I help you to improve your learning and contribute to your educational development?’*, is likewise concerned with students’ learning and development. Vygotsky maintained that learning and development *‘are interrelated from the child’s very first day of life’* while Piaget considered learning to be *‘a purely external process that is not actively involved in development’* (Vygotsky, 1978: p. 79 and p. 84). **For Piaget**, children have to pass through definite stages of development before they are ready to learn at a particular level; that is, learning *‘merely utilizes the achievements of development rather than providing an impetus for modifying its course’* (Vygotsky, 1978: p. 79).

However, there is general agreement that learning processes must be integrated within contemporary developmental theories that have arisen to replace Piaget’s theory and while these theories are more explicit than Piaget’s theory about the nature and role of learning

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<sup>1</sup> Although I focus mainly on students’ learning needs where one of my central questions is, *‘How can I help you to improve your learning and contribute to your educational development?’*, I do appreciate that ascertaining who is the most ‘disadvantaged’ student within a group of students involves many factors. Also significant is it to state my belief, regarding information processing, that both the rates at which students learn (speed of processing) and students’ processing capacities can increase over time (Wood, 1998: p. 70); that is, I have no desire to permanently ‘lock’ any student into a ‘most disadvantaged’ frame of reference.

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in intellectual growth, it is also agreed that learning alone cannot explain the nature of young people's understanding as they grow to adulthood (Wood, 1998: p. 69). The significant point, for the purposes of my thesis, is not to enter into the nature of the differences between learning and development nor to discuss the precise nature of the interaction between learning and development, but rather, in contrast to Piaget, to claim that **learning has a role to play in a student's development of appropriate conceptual structures that will help her/him to both understand and solve maximum/minimum problems in higher level Leaving Certificate mathematics<sup>1</sup>.**

Returning to Hugh's particular situation and connecting to the above three issues, I contend that:

### **1. Hugh was the most 'disadvantaged' student in the group of sixth form mathematics students as defined above [page 242-243].**

Firstly, among the 1996/1997 sixth form mathematics students, Hugh had obtained the lowest grade (grade D) in the Junior Certificate test in higher level mathematics in June 1995 and had consistently scored low marks in mathematics tests between December 1995 and October 1996 [indicative of actual development]. Secondly, Hugh seemed to have a slow rate of learning for higher level mathematics, as confirmed by the following **excerpt from my January 30th 1997 conversation with a critical friend, Ann Carroll** (Singularity Study Four: pp. 53-54), who earlier in the day had talked with Hugh about his learning in mathematics [indicative of potential development and therefore zone of proximal development] after Hugh's experiences in my classroom sessions of the previous three days:

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<sup>1</sup> In making this claim, I am not claiming that learning and development are identical processes. Further, both neo-nativists, who regard development as a process of maturation evolving from a genetic 'blueprint' rather than learning, and learning theorists, who argue that all knowledge and expertise has to be learned (Wood, 1998: p. 46) would challenge my stance regarding the interaction between learning and development and the distinctiveness of the two terms. However, rather than opening up an extensive debate at this juncture, I hope my work with Hugh will go some way towards supporting my claim that learning within a socially interactive context has a role to play in Hugh's development of appropriate conceptual structures for understanding and solving maximum/minimum problems in mathematics.

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**AC** --- *there might have been a fault with this morning - because I ended up because of pure instinct actually ended up not blatantly teaching him but slightly teaching because I felt if you were waiting for him - he was very very slow about it - I would say in a situation where I had an hour and knew there was all day long to work at it I could have waited -*

**JF** *What's in harmony with what you are saying - here [referring to the audiotaped conversation between Ann and Hugh earlier in the day] you said 'What would you take from it that would help you the next time?' - he said -- 'linking the two of them together' - maybe that's something I said to him before - but - connecting to what you're saying there - 'I wouldn't say it's impossible but it takes me a long time to cop on to them'*

**AC** *Isn't that brilliant. That's it, isn't it?*

**JF** *It is, yeah.*

**AC** *Yeah. Yeah.*

**JF** *And it's this 'long time' - it's - aptitude - the rate at which they learn.*

**AC** *Aptitude. Yeah, it is.*

**JF** *And I - I don't know - I don't want to prejudge but eh --- he might be better off doing ordinary level maths eventually but I don't want to pre-empt that decision.*

**AC** *From looking at his stuff on paper and from listening to him today I'd be very worried about him because of his basic maths.*

Here, to my mind, Ann is making a professional judgement based on an assessment of Hugh's actual development (*'stuff on paper'* from homework the evening before and *'listening to him'* when Hugh was offering his own solutions to problems) and Hugh's potential development (*'listening to him'* when Ann was trying to help Hugh with particular problems during their meeting). Also, when Ann says that she would be *'very worried about him because of his basic maths'*, Ann is thinking prospectively about Hugh's chances of passing the June 1997 papers in higher level mathematics. Relating resonantly to Ann's sense of Hugh's potential is Vygotsky's statement that the zone of proximal development characterizes mental development prospectively (Vygotsky, 1978: pp. 86-87).

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At this juncture, I believe it is worth noting that **the first claim in my fourth singularity study concerning Hugh was:**

**I believe there is ample evidence (Singularity Study Four: pp. 78-83) to support my claim that *both Hugh's knowledge of basics and the rate at which Hugh learned were 'stumbling blocks' for Hugh in learning higher level mathematics in general and higher level maxima/minima problems in particular.***

Returning to the issues mentioned on pp. 242-243:

**2. Hugh and I engaged in 'intermental functioning' within teaching/learning social interactions [Joint Involvement Episodes] in an effort to help Hugh to develop more appropriate conceptual structures for building up a function of one variable in maximum/minimum problems in differential calculus problems. [page 242]**

Ann and I agreed that the key task for Hugh in understanding and solving maximum/minimum problems was the following (Singularity Study Four: page 90), for which I will provide two examples of intermental functioning:

***If the function is expressed in terms of more than one variable, find an equation linking the variables, and hence express the function in terms of one variable.***

The **first example** is the final part of an excerpt from a **lunch-time conversation between Hugh and me [pp. 239-241] on January 24th, 1997**, when I was helping Hugh to build up a function of one variable in a question in which he had failed to do so the previous day:

**JF** ----- *What you have here. You have an  $r$  and you have a  $h$  --- so you need to be able to say ---  $h = 2 - r$ . Is that okay?*

**HK** Yeah.

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**JF** And then your volume - the volume was  $\pi r^2 h$  which is  $\pi r^2$  (multiplied by ) and then you put in your value for  $h$  which is

**HK**  $2 - r$ . Aye [breathing in at same time]. [a sign of a moment of insight I contend]

The second example is from a videoed classroom exchange on January 29th, 1997, when I was at the blackboard doing the following question with the sixth form mathematics students (Singularity Study Four: pp. 90-92):

**C11** *If the volume of a cylinder is constant, prove that the total area of its surface is a minimum when the height is equal to the diameter of the base.*

*I did question C11 myself and brought in Hugh to create the connection between two formulae (the skill that Hugh needed to practise). The following is the exchange between Hugh and me (minute 46 on the video - Data Archive):*

**JF**  $h = C/\pi r^2$  ————— (A)

*Surface Area, SA =  $2\pi r^2 + 2\pi rh$*

*which is  $= 2\pi r^2 + 2\pi r$ .* ————— (B)

*Multiplied by what, Hugh Kerr?*

**HK**  $C/\pi r^2$  ————— connecting (A) and (B)

**JF**  $C/\pi r^2$  [ and I write  $2\pi r^2 + 2\pi r.C/\pi r^2$  ]

*Here, Hugh was brought in on a connection and was successful. I had already done something similar in question B6 and I believe this also helped Hugh.*

In the above example I actively involved Hugh in the classroom in building up a function of one variable in order to solve a particular minimum but more complex cylinder question than that done by Hugh on January 23rd and discussed with me on January 24th [pp. 239-241]. I believe the above January 29th classroom exchange constitutes some further evidence of my efforts to respond successfully to Jack Whitehead's correspondence on January 27th:

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*I'm wondering if you will be able to show, partly through Hugh's voice how you make an educational response to Hugh. This doesn't mean that Hugh has to hear what you say in the way you intend but that your readers understand the educational intentions in your responses. (Jack Whitehead, Email, January 27th, 1997)*

Regarding the above classroom exchange with Hugh, I'd say that my educational intentions are clear to the reader; however, my intentions during the exchange may not have been clear to Hugh. What mattered more to me was that Hugh would experience success in independently making a connection at a critical stage in a reasonably complex question in a specific area that had been problematic for him (Singularity Study Four: pp. 91-92).

Connecting to the third issue raised on page 243:

**3. Hugh learned with the help of 'intermental functioning' to move a little in the direction of developing more appropriate conceptual structures in understanding and solving maximum/minimum problems in higher level mathematics, in terms of building up a function of one variable, but was still struggling.**

Before mentioning a conversation between Ann Carroll and me on January 30th, 1997, I'd like to revisit Hugh's attempt at a homework question given on January 29th (Singularity Study Four: page 57):



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##### *Some of Hugh's Attempt for the January 29th Homework Question*

**1996 Leaving Certificate Question: The slant length of a right circular cone is 10 cm. Find the maximum volume of the cone in terms of  $\pi$**

$$\text{Volume of Cone} = (1/3)\pi r^2 h = \pi r^2 h/3 \quad \text{----- (A)}$$

$$\text{Curved surface area} = \pi r l$$

$$= \pi(10)$$

$$= 10\pi$$

$$1/10\pi = r^2 \Rightarrow r^2 = (10\pi)^{-2} \quad \text{----- (B) [major errors in this line]}$$

$$\Rightarrow \pi r^2 h/3 = \pi(10\pi)^{-2} h/3 \quad \text{----- connecting (A) and (B)}$$

*Hugh then continued with a number of other errors. It can be seen from Hugh's attempt above that, despite some dreadful errors in deducing (B) which is totally incorrect, he successfully substituted a (B) into an (A). Acting on Breid's encouragement to identify the pattern I can see that Hugh made progress in forming a link in a question on his own [Journal, January 30th, 1996]*

##### *A Conversation Between Ann Carroll And Me, January 30th, 1997*

The simpler cylinder question done by Hugh as a **test question in the classroom (January 23rd)** and discussed with him the following day (**January 24th**: pp. 239-241), the more complex cylinder **classroom exchange question (January 29th)** described above [page 247] and the **homework question** about the cone given on **January 29th** (above) were all mentioned in **conversation with Ann Carroll on January 30th, 1997**. I believe it is worthwhile stressing that the three questions had three different contexts - **test in the classroom, classroom exchange and homework** and that Ann discussed them with Hugh on January 30th, 1997. The following is an excerpt from my own conversation with Ann (Singularity Study Four: pp. 93-95):

**JF** — he's doing a question [C11: page 247] here (with Ann) that we actually did yesterday in class, a more difficult question than this other cylinder question [page 237 and pp. 239-241], and was able to build up the function.

**AC** He was.

**JF** With a little bit of help from yourself.

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AC *With a little bit of help, yes.*

JF *especially in forming that bit there ( $2\pi r^2 + 2\pi rh$ )*

AC *Yeah.*

JF *Now, here - his homework last night (the cone question, page 249) - there was some progress in connecting the A and B -- trying to form a link and substitute - but difficulty with the B and then returning to the cylinder [page 237 and pp. 239-241] he was able to manage that - the easier one.*

AC *He was, yeah.*

JF *Now, to me, these are all pointers towards progress*

AC *They are, definitely.*

JF *even though he's still having difficulties in mathematics.*

AC *I think his difficulty will be if he is presented with something slightly different --*

#### *Difficulties with Basic Mathematics*

The conversation continued:

JF *I think there has been some improvement but not a lot really.*

AC *And it has all to do with his ability basically.*

JF *And it has all to do with his ability. [I had stated earlier (Singularity Study Four: page 55): 'I believe it is more accurate to refer to Hugh's 'aptitude' rather than his 'ability' here, because given time and a greater knowledge of basics Hugh would be 'able' to do more difficult questions.' This stance is consistent with a belief in the unlimited potential of every human being (Barber, 1995: p. 75) and the notion that every person's capability is vast (Humphreys, 1993: p. 113)]*

AC *He would have needed an awful lot of grinding when he was in first and second year to make sure the basics were 'hammered' [Ann is gentle!] into him.*

JF *Yeah.*

AC *I'd say he took it easy a fair bit -- he should know all these areas. Did you have him down there? (laughing)*

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**JF** *I don't think I did (laughing). --- We're asking him to comprehend things, to connect things, and where he's actually lacking a lot on basics.*

**AC** *Yeah. And you see, if you haven't got the basics*

**JF** *And that's what's causing him problems*

**AC** *That's what's causing him problems.*

**JF** *He understands in his mind that he needs to connect.*

**AC** *Yeah - but you see the connectors don't come to him because they're not there ---*

**JF** *No - what he has - he has a little bit of the cement but - I don't like this analogy you know really*

**AC** *but the cement is true - the cement would be those basics you see ----- there are certain people and no matter how hard you try they haven't got the ability to make the jumps or the connections.*

**JF** *Yeah.*

**AC** *He has if he had a better knowledge of his basics actually.*

**JF** *--- With regard to looking at the growth in his learning and development - if I am to look at that - and any kind of influence that I've had on it --- the only thing that I can argue is that I have had some influence -*

**AC** *Yeah.*

**JF** *that I hope I have had some influence on him -----*

**AC** *It was strange in the end. It wasn't worth discussing things with Paul and Felim at all --- they were on top of that. For Hugh it is beyond him --- What he'd need to do, being practical and forgetting about all your (laughing) stuff is - he'd need to change to pass and then repeat next year and do honours again to make sure he gets his maths --- but even then - are his basics good enough?*

**JF** *I don't know - I think what we'll do is see how he gets on in the Trial Leaving Certificate (in February 1997) and then I'm going to have a chat with him of a guidance nature to try and make a decision about it.*

Ann's final statement regarding Hugh was:

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*He's starting to think about making connections. He's trying to get into genuine mathematical thought but he is finding it very difficult. He is struggling.*

**My second claim regarding Hugh in the fourth singularity study (Singularity Study Four: pp. 83-95) was:**

**I believe that, despite Hugh's slower rate of learning and difficulties with basics, there was *a growth in Hugh's understanding of mathematics* during the course of the study.**

Ann's reflections that Hugh was '*starting to think about making connections*' and that he was '*trying to get into genuine mathematical thought*' aptly describe, for me, the progress in Hugh's understanding in the crucial first step of building up a function of one variable when understanding and solving maxima/minima problems in mathematics.

Summarizing, I have attempted to show in the above [pp. 242-252] that:

1. Vygotsky's notion of actual and potential development within the zone of proximal development<sup>1</sup> could be used as a criterion in ascertaining who the most 'disadvantaged' student is in a particular group of students, thereby enhancing my own working notion of distributive justice and of acting more justly in the classroom. [Issues 1 and 2 (pp. 242-243)]

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<sup>1</sup> My own working notion of *the zone of proximal development*, while taking students' mathematics results into account, is more intuitive than Vygotsky's notion, especially in gauging Hugh's potential development. Vygotsky's definition is quite technical and quantitative (Vygotsky, 1978: p. 86) where the zone of proximal development is equal to the level of potential development as determined through problem solving with assistance, say, age 17, less the actual developmental level as determined by independent problem solving, say, age 15: here, the actual developmental level is 15 years and the zone of proximal development is 2 years. My own approach is more practicable and intuitive and does not involve formal psychological measurements. I believe Footnote 3 (page 242) is a reasonable indication of my 1996/1997 ability to gauge a student's actual and potential development in understanding and solving problems in higher level Leaving Certificate mathematics.

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2. Hugh and I engaged in ‘intermental functioning’ within the realm of Hugh’s zone of proximal development for understanding and solving maximum/minimum questions in higher level Leaving Certificate mathematics. [Issue 1 (page 242)]

3. Despite the fact that Hugh was still struggling, intermental functioning within learning/teaching social interactions between Hugh and me and between Ann and Hugh helped Hugh to develop a more appropriate conceptual structure for building up a function of one variable in maximum/minimum differential calculus problems in higher level Leaving Certificate mathematics. [Issue 3 (page 243)]

After my experience with Hugh in the fourth singularity study (for which the duration of data gathering was October 8th, 1996 - May 19th, 1997) I am more inclined to disagree with

*‘the Piagetian view that there are psychological structures in the human mind that are essentially independent of context, task content and social factors’* (Fontana, 1995: p. 64).

Especially when engaged in social interactions that are operative within a student’s zone of proximal development, I am more inclined to side with Vygotsky who held that

*‘competent adults can help the child [adolescent] by guiding her or him repeatedly [with some possible repetition] through the relevant behaviour [activities], thus providing a ‘scaffolding’ within which the child [adolescent] can act as if competent and by so acting can develop the strategies needed to reach the successful solution’<sup>1</sup>* (Fontana, 1995: p. 64).

Therefore, intermental functioning between a student and a teacher can be appropriated over time within a student’s intramental functioning. My fourth singularity study shows only some movement for Hugh in this positive direction for applications of differential calculus maximum/minimum problems in higher level Leaving Certificate mathematics.

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<sup>1</sup> The bracketed terms are my own and are more relevant to my particular situation with Hugh.

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Admittedly, one problematic assumption underlying Vygotsky's work, according to some readings, is the assumption that the primary force of development comes from outside the individual; for example, in relation to the role of the environment in child development, Vygotsky wrote that *'the environment - plays the role not of the situation of (child) development, but of its source'*<sup>1</sup>. However, whilst the growing popularity of Vygotsky's work acts as a corrective to earlier individualistic emphases in psychology, Wertsch and Tulviste (1996) maintain that **the basic form of action envisioned by Vygotsky was mediated action**, where:

*'such action always involves an inherent tension between the mediational means [e.g. semantic mediation<sup>2</sup>] and the individual or individuals using them in unique, concrete instances --- [and significantly] agency is defined as "individual(s)-operating-with-mediational-means"'* (Wertsch and Tulviste, 1996: pp. 68-69).

Therefore, countering a deterministic view of individuals, the individual is not without agency<sup>3</sup>. Nevertheless, Wertsch and Tulviste (1996: p. 69) also acknowledge that it is only recently that the notion of mediated action has been explored in detail in connection with Vygotsky's work, implying that more work is needed in this area.

Previously, I have made an effort to link my work and the emphases on social interaction within Vygotsky's and Dewey's work [page 106]. In this regard, it seems to me that when the sixth form students were responding to the question, *'How can I help you to improve your learning?'*, they had both a concrete and an intuitive idea of their actual and potential development in chemistry and mathematics, and it is in this sense that the greater enactment of collaboratively elicited and created teaching/learning communicative

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<sup>1</sup> *'Vygotsky's relatively unsophisticated view of the natural line of development can be traced largely to the dearth of theoretical and empirical research on infants available in the early decades of the twentieth century'* (Wertsch and Tulviste, 1996: p. 68).

<sup>2</sup> Wertsch and Tulviste (1996: p. 61).

<sup>3</sup> My own view is tending toward the belief that an individual is involved, as an active agent, in the social construction of her/his own mind. Consistent with this belief is my belief that both nature and nurture (and I have little interest in giving % weightings) play a role in any human development.

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activities (social interactions) connects to the sixth form students' zones of proximal development for the specific subject areas (mathematics and chemistry)<sup>1</sup>.

When working with Hugh in the fourth study of a singularity, I focused on one individual and, although we (Hugh and I) engaged in teaching/learning social interactions within the realm of Hugh's zone of proximal development, teaching/learning communicative activities for the whole group of sixth form mathematics students in 1996/1997 were not systematically enacted and evaluated.

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<sup>1</sup> With the possibility of concomitant/consequent/subsequent improved learning for the sixth form students.

## 2. Hugh's Metaphors for Learning Mathematics

Returning to my focus on Hugh's conceptual vision, my interest extended beyond Hugh's ability to build conceptual structures for maximum/minimum problems in higher level mathematics. On November 26th, 1996, Breid, a critical friend from the local convent secondary school, encouraged me to obtain attitudinal information from the sixth form students before getting into the study proper and, from what Breid said (Singularity Study Four: page 76), I was reminded of Selinger's interest in asking pupils to consider metaphors for learning mathematics in which:

*finding out how pupils view mathematical learning can often open the door to their fears and concerns as well as revealing what it is about mathematics that motivates them.*  
(Selinger, 1994: p. 191)

The following was Hugh's response (**December 17th, 1996**) to the questionnaire seeking information regarding his 'image' of learning mathematics:

*Learning mathematics, for me, is like a walk through a maze. A maze is something which is difficult to fathom your way around it at the beginning but in the end you nearly always find your way out, if not by yourself then maybe with the help of others.* (Hugh, December 17th, 1996)

Regarding Hugh's image of the maze, on **December 21st, 1996**, Ann Carroll noted '*no signposts, more lost* (than Felim and Paul) --- *asking for help, willing to accept it*' (Singularity Four: page 21).

On **January 13th, 1997**, four weeks after Hugh brought in his response, I had an audiotaped conversation with Hugh in an attempt to gain a greater understanding of some of Hugh's attitude to learning mathematics and also to see if what he said would be in harmony with what he wrote four weeks earlier (Singularity Study Four: pp. 22-23).



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**JF** — and when I gave you the questionnaire you said 'Learning mathematics for me is like a walk through a maze'. So, what I want to ask you is — in what way is learning mathematics like a walk through a maze?

**HK** Well to be honest it's — you find it difficult at first but once you learn the basics and put down markers at certain points then you can usually find your way out of it.

**JF** Has that been your experience that you usually do find your way out of it?

**HK** Yeah. Eventually. Yeah I do find my way out of it. It takes a wee bit longer than normal therefore like — the maze —It takes long to get out of it but

**JF** Yeah.

**HK** once you know your way out. [pause]

**JF** Well when you say it takes a little bit longer than normal what do you mean by 'normal'?

**HK** Like for eh say the average honours maths student.

**JF** Right.

**HK** They find it easier to pick things up — that there.

**JF** So in some sense you are comparing yourself with others.

**HK** Yeah.

**JF** Yeah. But do you feel you can get there in the end?

**HK** Yeah. I'm pretty confident I can get there in the end. (quietly)

The very quiet way Hugh said 'Yeah. I'm pretty confident I can get there in the end' led me to suspect that he didn't really feel that confident about 'getting there in the end'.

Perhaps my closed question, 'But do you feel you can get there in the end?' with a possible negative inference for Hugh if answered in the negative, forced him into stating a more positive stance than he actually felt. I really don't know. I do know my intention when asking Hugh the question was to encourage him to believe in himself and not to feel

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any less as a person than *'the average honours maths student'* because *'it takes a wee bit longer than normal'*.

Although Hugh mentioned *'markers'* (and perhaps was more conscious of the need for *'markers'* than a month earlier) in the above conversation on **January 13th, 1997**, it seems to me that Hugh's **'image'** of the maze gives a strong sense of Hugh's **conceptual vision being blocked** in mathematics. Admittedly, there is a sense in which recognising the need for *'markers'* could also be interpreted as recognising the need for building more appropriate conceptual structures in understanding and solving mathematics problems, thereby implying a development in Hugh's thinking and attitude.

Towards the end of the year I was curious to see if Hugh would have a different *'image'* of learning mathematics seeing that he had changed to ordinary level mathematics from higher level mathematics and that there was some progress in his ability to connect formulae [Hugh was still in the classroom] (Singularity Study Four: pp. 97-99):

**Hugh's 'image' of learning mathematics on May 7th, 1997, was:**

*Learning mathematics, for me, is like walking through a hazy mist in the moors in the early morning. As the mist rises and as the day goes on you have more of a clear view of what is coming up in front of you. Eventually it is nearly all clear but you still have to watch your step because you never know what you are going to stumble upon next.*  
(Hugh, May 7th, 1997)

Whilst recognising that Hugh changed from higher level to ordinary level mathematics, I believe Hugh's new *'image'* for learning mathematics communicates a **more hopeful belief in his own ability to understand and solve problems and embodies a sense of his conceptual vision becoming 'unblocked' in mathematics** as the following successful solution to a homework question on May 19th, 1997, illustrates:

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### *A Solution To A Homework Problem, May 19th, 1997*

***A solid cylinder, made of lead, has a radius of length 15 cm and height of 135 cm. Find its volume in terms of  $\pi$***

*length = 15 cm*

*height = 135 cm*

*let volume of cylinder =  $C = \pi r^2 h$*

$$\Rightarrow C = \pi(15)^2(135)$$

$$\Rightarrow C = 30375\pi \text{ cm}^3$$

answer/calculator

***The solid cylinder is melted down and recast to make four identical right circular cones. The height of each cone is equal to twice the length of its base radius. Calculate the base radius length of the cones.***

$$h = 2r$$

----- (A)

$$\text{Volume of 1 cone} = 7593.75\pi \text{ cm}^3$$

calculator

$$\text{let volume of cone} = VC = (1/3)\pi r^2 h \quad \text{----- (B)}$$

$$\Rightarrow 7593.75\pi = (1/3)\pi r^2(2r)$$

----- connecting (A) and (B)

$$\Rightarrow 3(7593.75)\pi = 2\pi r^3$$

$$\Rightarrow 3(7593.75) = 2r^3$$

$$\Rightarrow 222781.25 = 2r^3$$

calculator

$$\Rightarrow 11390.625 = r^3$$

calculator

$$\Rightarrow 22.5 \text{ cm} = r$$

answer/calculator

**The above is a delightful example of Hugh making a connection between two formulae (or connecting two concepts and forming a conceptual structure) and taking the solution to a successful conclusion in an ordinary level Leaving Certificate examination question (not a maximum/minimum question).**

Despite's Hugh's perhaps reasonable anticipation '*you still have to watch your step because you never know what you are going to stumble upon next*', I believe his above problem solving is a good example of Hugh's ability to '*have more of a clear view of what is coming up in front of you*'.

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*HK As the mist rises and as the day goes on you have more of a clear view of what is coming up in front of you.*

Admittedly, in the above problem, a simpler overall conceptual structure than in maxima/minima problems is required. Nevertheless, Hugh was successfully connecting two formulae and forming a function of one variable and then successfully completing the question.

Hugh's success in the above ordinary level question is congruent with my expectation stated in an email [Data Archive: Email File] to **Jack Whitehead on December 12th, 1997** (which also intimates a sense of Hugh's potential development in understanding and solving mathematics problems):

*I would expect Hugh, who would be the 'weakest' of the three students at mathematics, to reach a relational level of understanding in the easier questions but to find reaching this level much more elusive when attempting the questions of greater difficulty. (James Finnegan, Email, December 12th, 1996)*

**The third claim in my fourth singularity study (Singularity Study Four: page 97) was:**

**Hugh's 'image' of learning mathematics proffered in May 1997 communicates a more hopeful belief in his own ability to understand and solve problems, albeit in ordinary level mathematics, than the 'image' proffered in December 1996.**

**It is my belief that the C2 grade (60% - 64%) obtained by Hugh in the Ordinary Level Leaving Certificate Mathematics tests in June 1997 acts as a further support for the above claim.**

The metaphorical 'images' from Hugh on December 17th (1996), January 13th (1997), and May 7th (1997) communicate, I believe, the change and development in Hugh's

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thinking/feeling mood associated with his conceptual vision in mathematics<sup>1</sup> and helped me to more fully understand Hugh as a learner of mathematics. What is also significant, I believe, is that these metaphorical images emerged from a dialogic coming to know between Hugh and me as a result of my reading of Selinger (1994: pp. 185-194) and my conversations with Breid and Ann, which (my reading and conversations) were also part of a dialogic coming to know.

The final part of my fourth study of a singularity [Singularity Study Four: page 105] includes my **fourth claim<sup>2</sup> in the fourth singularity study** and reads:

*I believe my growing understanding of Hugh's learning was an empathic understanding and that this understanding had a positive influence on Hugh's learning and on Hugh's confidence in his ability to succeed in mathematics.*

*JF* Do you think I have helped in any way?

*HK* Yeah. You're taking your time with me. You're keeping an eye on me. It helps a lot definitely — you've been egging me on - that there - it helps me to do it.

At this juncture, it seems that the focus of the dialogue has moved away from Piaget and Vygotsky<sup>3</sup> and that I have once again crossed the valley in my metaphor to the 'ground' of the fourth field [page 75], perhaps an author's ploy to place Hugh at the centre of this part of Chapter Eleven. However, such a movement is also an effort, in part, to remind the reader of the predominantly a posteriori nature of my theorising and, for me, there is no doubt that my understandings relating to Hugh's conceptual vision in the fourth singularity

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<sup>1</sup> To me, Hugh's sense of his own conceptual vision in mathematics is related to Hugh's sense of his actual and potential development in mathematics.

<sup>2</sup> Pat D'Arcy, proffering dialogic feedback for Chapter Eleven as a key respondent (Thursday, June 25th, 1998), helped me to appreciate the above claim as a fourth claim in my 1997 study of a singularity.

<sup>3</sup> While I recognise that there are many challenges to Piaget's theory [Lunzer (1989: pp. 27-29), Fontana (1995: pp. 59-61), Schaffer (1996: p. 252), and Wood (1998: pp. 49-72)] and that Wood (1998: p. 42) has stated that 'it is probably fair to say that there are as many grounds for disagreement amongst those who count themselves as 'neo-Vygotskians' as there are, say, between Vygotskians and those who derive theoretical inspiration from Piaget', it is my belief, in relation to my work with Hugh and the specific focus on his conceptual vision in mathematics, that sufficiently opening up and doing justice to such a huge and complex debate is not part of the agenda for my thesis.

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study have been enriched and sharpened through dialogue with some of Vygotsky's work<sup>1</sup>, in particular, by (a) Vygotsky's notion of the zone of proximal development; by (b) the emphasis he placed on social interaction in the social construction of mind; and by (c) his appreciation of the interaction and distinctiveness between learning and development.

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<sup>1</sup> And, to a lesser extent, through dialogue with some of Piaget's work.

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| <p style="text-align: center;"><b>III. A Sixth Form Student's 'Conceptual Vision'<br/>in Mathematics Revisited</b></p> |
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Firstly, I will state what I will term **'first order' claims to knowledge** which emanated from the **'data'** of my fourth study of a singularity (1997):

- 1. I believe there is ample evidence (Singularity Study Four: pp. 78-83) to support my claim that both Hugh's knowledge of basics and the rate at which Hugh learned were 'stumbling blocks' for Hugh in learning higher level mathematics in general and higher level maxima/minima problems in particular. [page 246 of thesis]**
- 2. I believe that, despite Hugh's slower rate of learning and difficulties with basics, there was a growth in Hugh's understanding of mathematics during the course of the study. (Singularity Study Four: pp. 83-95) [page 252 of thesis]**
- 3. Hugh's 'image' of learning mathematics proffered in May 1997 communicates a more hopeful belief in his own ability to understand and solve problems, albeit in ordinary level mathematics, than the 'image' proffered in December 1996. (Singularity Study Four, 1997: p. 97) [page 260 of thesis]**
- 4. I believe my growing understanding of Hugh's learning was an empathic understanding and that this understanding had a positive influence on Hugh's learning and on Hugh's confidence in his ability to succeed in mathematics. (Singularity Study Four, 1997: p. 105) [page 261 of thesis]**

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Secondly, I will refer to what I will term **‘second order’ knowledge claims** which emanated from dialogic interaction between my fourth study of a singularity and some of the work of Vygotsky<sup>1</sup>:

One possible implication of my first ‘second order’ claim on pp. 242-243 for my own future teaching and perhaps for some other teachers’ future teaching is that Vygotsky’s notion of actual and potential development within the zone of proximal development<sup>2</sup> could be used as one criterion in ascertaining who the most ‘disadvantaged’ student is in a particular group of students, thereby enhancing my own and possibly other teachers’ working notions of distributive justice and of acting more justly in the classroom. [pp. 242-243 and page 252]

In connection with the 1996-1997 sixth form mathematics students (17-18 year-old students) in my fourth study of a singularity it is worth reiterating that **Hugh was the most ‘disadvantaged’ student in the 1996/1997 group of sixth form mathematics students as defined by my pp. 242-243 notion of distributive justice which incorporates a practical and discursively conscious interpretation of Vygotsky’s notion of the zone of proximal development.** [pp. 242-243 and page 244]

My second ‘second order’ claim concerns **the interaction between learning and development** (Vygotsky, 1978: pp. 79-91). Vygotsky maintained that learning and development *‘are interrelated from the child’s very first day of life’* while Piaget considered learning to be *‘a purely external process that is not actively involved in development’* (Vygotsky, 1978: p. 79 and p. 84). [page 243]

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<sup>1</sup> When finding out about Vygotsky’s work I used three books, one book by Vygotsky (1978), one recent book dedicated solely to the work of Vygotsky and edited by Daniels (1996), and a recent book on learning which has significant sections on some of the work of Vygotsky (Wood, 1998). In my view, this was a highly appropriate form of triangulation to help me construct more sophisticated theory from my fourth study of a singularity (1997).

<sup>2</sup> Footnote 1, page 252.



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It seems to me that when Hugh was developing '*a more appropriate conceptual structure for building up a function of one variable in maximum/minimum differential calculus problems — (but) was still struggling*' [pp. 249-252] he was beginning to engage in higher quality intramental functioning in a specific area of mathematics. Indeed, it seems fair to say that only slight progress was made by Hugh in the direction of higher quality intramental functioning when dealing with maximum/minimum problems in higher level mathematics [page 253].

Although slight, this movement from intermental functioning to intramental functioning for Hugh in a specific content area of mathematics, nonetheless, leads me to claim that **learning has a role to play in a student's development of appropriate conceptual structures that will help her/him to both understand and solve maximum/minimum differential calculus problems in higher level Leaving Certificate mathematics.**

One implication of this claim is that it provides some support for, and at the very least does not contradict, Vygotsky's notion that learning can provide an impetus for modifying the course of development (Vygotsky, 1978: p. 79), a notion which counters Piaget's claim that learning '*merely utilizes the achievements of development*' (Ibid.).

My third 'second order' claim concerns the emphases on social interaction within Vygotsky's and Dewey's work [pp. 254-255].

An implication of my third 'second order' claim is that when I claim that I was engaging in teaching/learning social interactions within the realm of the sixth form students' zones of proximal development for the 1994, 1995, 1996, and 1997 singularity studies, I am effectively establishing a connection between Dewey's '*mode of associated living, of conjoint communicated experiences*' [(in my singularity study contexts) teaching/learning social interactions which include '*teaching/learning communicative activities*'] and Vygotsky's notion of '*the zone of proximal development*'. Further, it seems to me that when my first 'second order' claim [page 242-243] is taken into account, especially for my

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1994 and 1996 singularity studies, that I am also establishing a practical and theoretical connection between Dewey's notion of democracy and my own notion of social justice [page 222] which can accommodate a practical and discursively conscious<sup>1</sup> interpretation of Vygotsky's notion of the zone of proximal development when ascertaining who is the most disadvantaged student or group of students in a particular learning context.

In relation to my future teaching practice, I believe my first 'second order' claim [pp. 242-243] is the most important claim emanating from my fourth study of a singularity (1997). This claim can be incorporated into my own theory of social justice [page 222] as explained above.

The reflective-transfer question, 'What's in My Work for Others?', is the central theme and question I address in my next and final chapter, Chapter Twelve.

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<sup>1</sup> Footnote 2, page 23.

## **Chapter Twelve: Addressing the Issues of Transferability, Relatability, and Generalisability - What's in My Work for Others?**

I now come to the issues of transferability, relatability, and generalisability. For example, in connection with my claims stated on page 140 [Chapter Seven], 'How transferable are my knowledge claims relating to teaching/learning communicative activities?'

### **1. My Own Practice**

It is my belief, regarding the potential transferability of eliciting/creating, enacting more fully and evaluating 'teaching/learning communicative activities' in the classroom and therefore of engaging in 'more democratic actions in the classroom' with the concomitant facilitation of greater expression of 'student voices', that the following statement indicates a reasonable degree of openness on my part to the notion of transferability from the early stages of my educational action research work:

*In the earlier [the first two] singularity studies I felt it was important that [the elicitation/creation, greater enactment and evaluation of] teaching/learning communicative activities had the potential for transferability (Lincoln and Guba, 1985: p. 297) to other subject areas apart from chemistry and mathematics and that teachers or lecturers who read my work might engage with their own students in collaboratively eliciting/creating, more fully enacting, and evaluating teaching/learning communicative activities which the students felt could be lived out more fully in a particular subject with a view to helping the students to improve their understandings. [page 90]*

However, commenting on my openness to the potential transferability of my work is clearly not the same as claiming that my work *is* transferable to other contexts. Bassey (1995), referring to studies of singularities, notes:

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*The point about the relatability of findings from one situation to another is that there is no guarantee that they can be applied, but the merit of the comparison is that it may stimulate worthwhile thinking. (Bassey, 1995: p. 111)*

Further, Lincoln and Guba (1985) note:

*Even if the applier believes on the basis of the empirical evidence that sending and receiving contexts are sufficiently similar to allow one to entertain the possibility of transfer, he or she is nevertheless well advised to carry out a small verifying study to be certain. (Lincoln and Guba, 1985: p. 298)*

Whilst it is appropriate that other investigators in other ‘receiving’ singularity study contexts similar to my own singularity study contexts are to be considered, in my view, the primary (but not the only) assessors regarding judgements about the transferability of my claims to their contexts, **the following excerpt from my second singularity study (Singularity Study Two: pp. 85-86) provides some significant evidence I believe for transferability within my own work**, where I am the investigator in both a ‘sending’ singularity study context (1994) and a similar ‘receiving’ singularity study context (1995):

*Regarding teaching activities [that is, ‘teaching/learning communicative activities’] empathically generated [with] the students with the intention of improving their learning ———, the following table compares mean values for EC (Explaining more Clearly), GS (Going more Slowly), and IQ (Inviting Questions from students) for the two years:*

**Table S2.13. Comparing EC, GS, and IQ for 1994 and 1995.**

| <b>Teaching Activity</b>      | <b>EC</b>   | <b>GS</b>   | <b>IQ</b>   |
|-------------------------------|-------------|-------------|-------------|
| <b>1994 Singularity Study</b> | <i>1.86</i> | <i>1.29</i> | <i>2.00</i> |
| <b>1995 Singularity Study</b> | <i>1.70</i> | <i>1.26</i> | <i>2.70</i> |

[1 = improved slightly, 2 = improved a reasonable amount, and 3 = improved ‘a fair bit’]

*[EC for 1995 is obtained by halving the sum of the mean values for ECSTOT (1.72) and ECTW (1.67) from table S2.3 (page 47 of Singularity Two Report).]<sup>1</sup>*

*In 1994, I was working with 21 sixth form chemistry students from March to May, and in 1995 I was working with 23 sixth form mathematics students from January to March. It was my second year teaching both groups, so there was a ‘relationship base’ established*

<sup>1</sup> Page 109 gives the meanings of ECSTOT and ECTW.

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*which I believe is useful in action research and makes risk-taking a little bit easier. Despite the fact that they were two different groups in two different subjects, there is a lot of harmony between the mean values<sup>1</sup> (EC, GS, and IQ were the only student-generated 'variables' common to the two years).*

*[The Mann-Whitney U test confirms that there is no significant difference between the means for EC, GS, and IQ between 1994 and 1995<sup>2</sup>. (Data Archive)]*

*Table S2.14, comparing the means of the mean values for the teaching/learning communicative activities [8 activities last year (1994), and 6 activities this year (1995)] and the students' mean values for learning (I'm taking the students' 'understanding of mathematics', UM, to mean 'learning') for the two years, further nurtures the view that **transferability**, Lincoln's and Guba's second criterion for validating an enquiry (Lincoln and Guba, 1985: pp. 297-298), is possible between my first two singularity studies.*

**Table S2.14. Mean Values for teaching activities and learning, 1994 and 1995.**

| <b>Classroom Action Research</b> | <b>Mean Value For Teaching Activities</b> | <b>Mean Value For Learning</b> |
|----------------------------------|---|--------------------------------|
| <b>1994 Singularity Study</b>    | 1.92                                      | 1.86                           |
| <b>1995 Singularity Study</b>    | 1.86                                      | 1.95                           |

*I am encouraged by the consistencies within and between the studies. My deceptively simple but efficacious knowledge claim, grounded in my action research practice, is that a slight to a reasonable improvement in my teaching [primarily realized through the **elicitation/creation and greater enactment of teaching/learning communicative activities - which to a responsible degree of proficiency democratically embodied 'student voices'**] helped to bring about a slight to a reasonable improvement in learning for my students from the perspectives of the majority of the sixth form students, based on the 1994 and the 1995 evidence. This lends support to the assumption that 'ownership of learning promotes an improvement in that learning' (Laidlaw, 1993 in Whitehead, 1993: p. 160); additionally, it encourages me to live a more democratic form of social action in my teaching practice. [Singularity Study Two: pp. 85-86]*

The main inference which I wish to draw from the above data, where I claim to display some significant evidence for transferability within my own work and where I am the investigator in both a 'sending' singularity study context (1994) and a similar 'receiving'

<sup>1</sup> In my view, the similarities between the two singularity study contexts were sufficiently significant to warrant a consideration of transferability of claims.

<sup>2</sup> For EC, GS, and IQ,  $z = .16, 1.05, \text{ and } 1.12$  respectively. As these statistics are not greater than 1.96, the null hypothesis holds in each case; that is, there is no significant difference between the EC, GS, and IQ means for 1994 and 1995. In calculating these statistics I have used Clegg (1990: pp. 164-165) and Robson (1973: p. 110).

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singularity study context (1995), is that such apparent transferability within my own work increases the potentiality for the transferability of my claims by other investigators to their singularity study contexts. The claims I have in mind are concerned with **eliciting/creating, enacting more fully, and evaluating teaching/learning communicative activities as a particular embodiment of ‘student voices’ and more democratic actions in the classroom.** I fully acknowledge that this is a probabilistic notion: that is, I contend that the greater the internal consistency and credibility<sup>1</sup> of my own singularity study claims, the richer the ‘sending’ information that is available to investigators in ‘receiving’ singularity study contexts; therefore, the greater the transfer potential of my work and knowledge claims because other investigators can make more informed judgements about the similarity/dissimilarity of my ‘sending’ and their ‘receiving’ singularity study contexts.

### *Teaching/Learning Communicative Activities - Beyond My Own Frame of Reference*

Joe English, a teaching colleague and critical friend in my school, pasted my 1994 teaching/learning communicative activities to his desk during 1995. In 1996, David Kennedy, Head of Mathematics in the local Institute of Technology, asked me for a copy of my 1995 teaching/learning communicative activities [mathematics study] when I was discussing some of my work with him. In April 2000, I had a paper published (Finnegan, 2000) in *Irish Educational Studies*, which is based on my 1995 singularity study and centres on the following claim in my Abstract:

*In helping to facilitate an expression of student voices in my teaching, as I seek to improve their learning, I enable my sixth form students and myself to engage in more democratic actions and more egalitarian power relations in the classroom, primarily through the elicitation/creation, greater enactment, and evaluation of teaching/learning communicative activities.* [page ii]

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<sup>1</sup> While I have employed a particular kind of judgement (part of which involves the utilization of the Mann-Whitney U test) which, in my view, confirms a degree of transferability *between* my 1994 and 1995 singularity studies, I consider this degree of transferability *within* my work to fall within the realm of the *internal consistency* and *credibility* of my singularity study ‘findings’ when considering the transferability of my claims by other investigators to their singularity study contexts.

## 2. Transferability/Relatability/Generalisability

The above [pp.267-270] provides some significant evidence for transferability within my own work where I am the investigator in both a 'sending' singularity study context (1994) and a similar 'receiving' singularity study context (1995) [**Time Dimension**].

I have also explained earlier [pp. 186-189] how the notion of poetic metaphor, which includes the notion of root metaphors of religious thought, has helped me to extend my theorising around more socially just actions in the classroom [**Extending the Range of Interests**].

My theorising on pp. 145-156, which centres on appreciating expressive modes of treatment of poetic forms of representation in my theory construction [**Depth Dimension**], can further bolster, in my view, the above exemplar of theory development around social justice. In this way, I believe I have further extended the potential transferability and relatability of my work, because more relevant information is available to potential educational researchers in 'receiving' singularity study contexts.

The above three dimensions, to my mind, point in a meaningful triangular fashion to the importance of the task of establishing a high degree of internal consistency and credibility within my own educational action research work and claims to knowledge *before* an educational researcher outside my time-and-context boundary is to make any significant judgement about the transferability, relatability, and generalisability of my work.

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In harmony with my own approach, Ely, Anzul, Friedman, Garner, and McCormack-Steinmetz (1991), stress the centrality of the criterion of credibility in judging qualitative research work:

*a qualitative researcher pays continuous, recursive, and, we dare say, excruciating attention to being trustworthy. This concern begins before the first word is written and does not end until the research is completed. The quest is to make the research project credible, produce results that can be trusted, and establish findings that are, to use Lincoln and Guba's phrase, 'worth paying attention to' (1985, p. 290). --- Here ----- we focus on --- establishing credibility because, to us, this is the bedrock of trustworthiness. (Ely, Anzul, Friedman, Garner, and McCormack-Steinmetz, 1991: p. 156)*

However, accompanying the emphasis that I place on the importance of establishing the criterion of credibility in my action research is a prudent caution in regard to making claims to transferability beyond the space-and-time boundary of my work. [This point is taken up again on page 277.]

### *Generalisability*

Strongly resonant with the above emphasis on credibility and appropriate caution in making claims, Lomax (1994), addressing the notion of generalisability in action research studies, states:

*I am proud to be associated with the ultra caution with which most action researchers make their claims. Generalisation in the sense that an experiment replicated in exactly the same controlled conditions will have the same results a second time round seems a nonsensical<sup>1</sup> construct in the hurly burly of social interaction. However, I do believe it important that action research projects have an application elsewhere, and that action researchers are able to communicate their insights to others with a useful result. --- The action research process needs to be made transparent so that a 'knowledgeable' outsider has sufficient information to judge whether the research is relevant to their situation<sup>2</sup>. The claims made about the outcomes of the action research need to be carefully scrutinised by professional peers who can validate their authenticity --- In terms of criteria for judging action research it seems that the transparency of the research*

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<sup>1</sup> I would prefer the word 'inappropriate' to 'nonsensical' [see pp. 150-151].

<sup>2</sup> Here, I believe the notions of 'transferability' (Lincoln and Guba, 1985: pp. 296-298) and 'relatability' (Bassey, 1995: p. 111) readily come to mind.



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*process and the authenticity of the research claims are the key criteria*<sup>1</sup>. (Lomax, 1994: p. 118)

**October 27th 1999 Comment:** Like Lomax (1994: p. 118), I too believe it is important that *'action research projects have an application elsewhere'*. In Section 3 of this chapter, I directly address the question, *'What's in My Work for Others?'*<sup>2</sup>.

To my mind, the following two significant questions emerge from the above excerpt from Lomax's paper (Lomax, 1994: pp. 113-126):

- How can I make the action research process more transparent? [**e.g. after feedback from my first viva [pp. 298-300] and after feedback from key respondents to my second thesis submission]**]
- How can I become more authentic in my articulations and communications of my claims?

The reason why I phrase the questions in terms of bringing about improvement is that forward movement can therefore be impelled through experiencing oneself as a living contradiction within a particular situation. Also, positive lived responses over time to such questions, in my view, will help extend the potential transferability of an educational action researcher's work and knowledge claims by providing clearer and more congruent<sup>3</sup> information to educational researchers in 'receiving' singularity study contexts.

Whitehead (1989: pp. 41-52 and 1993: p. 73), also addressing the notion of generalisability within action research, views generalisability as shared values and meanings embodied in the practices of researchers engaged in living educational theory:

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<sup>1</sup> The bold type is my own.

<sup>2</sup> This question was prompted by the following July 20th 1999 written comment from my external examiner: *'Isn't there an expectation that others may gain something that they can apply from it in their own situations? This is not overt in my reading of the thesis.'*

<sup>3</sup> I am using 'congruent' in the Rogerian sense where 'congruence' means harmony between what I experience, what I am aware of, and what I appropriately communicate to another (Rogers, 1961: p. 61). I am taking 'authenticity' to be synonymous with 'congruence'.

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*To the extent that the values underpinning the practices, the dialogues of question and answer and the systematic form of action-reflection cycle, are shared assumptions within (the) research community, then we are constructing an educational theory with some potential for generalisability. (Whitehead, 1993: p. 73)*

Consistent with Whitehead's notion of generalisability, in a recent email (**August 31st, 1998**) to **Michael Bassey**, I referred to generalisability (in terms of shared meanings and values), and also expressed some reservations with the notion of 'fuzzy generalisation' which was the topic of Bassey's August 27th 1998 paper at the BERA Conference in Belfast (Bassey, 1998a: pp. 1-10):

*Dear Michael,*

*— from my own point of view, as I am engaged in educational action research singularity studies with sixth form [17-18 year-old] students, I would have preferred to see the notion of relatability (and transferability) developed as a means to giving greater expression to the notion of generalisability (in terms of shared meanings and values) rather than seeing the term 'fuzzy generalisation' introduced.*

*The following, from your QUB<sup>1</sup> paper, sits uncomfortably in my mind:*

*'The fuzzy generalisation is drawn that in other similar situations x is likely to lead to y. There is no statistical measure of "is likely to".' (Bottom of page 6 of your BERA 1998 paper, August 27th)*

*— In my view, your claim that 'There is no statistical measure of "is likely to" ' does not obviate that fact that when you use language like 'is likely to' and 'may' you are engaging with probabilistic notions. My own fear regarding your notion of 'fuzzy generalisation' is that, in making a statement that is both (a) predictive (and possibly retrospective for some readers) - 'in other similar situations', and (b) probabilistic - 'x is likely to lead to y', and which is based on a small number of opportunistically chosen situations, you might inadvertently enhance the importation of a connotation of low probability into the sphere of studies of singularities, thereby devaluing the potential for a richer kind of generalisability that is possible through the development of terms like 'relatability' and 'transferability'.*

*I give this criticism in good faith Michael and wish you well in your work.*

*Warm regards,  
James Finnegan.*

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<sup>1</sup> Queen's University Belfast.

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A more fine-tuned point I wish to make in connection with the above email, is that, in my opinion, the notion of ‘fuzzy generalisation’ is inappropriate for educational action research singularity studies. In apparent agreement with this view, it must be acknowledged that Bassey, in his *‘Overview of Empirical Educational Research’* (Bassey, 1998a: p. 9; Bassey, 1999: p. 4) sees *‘Action Researches’* leading to *‘Stories’* within *‘Outcomes as Interpretations’* rather than leading to *‘Fuzzy Generalisations’* within *‘Outcomes as Predictions’*.

As a possible challenge to the above email [page 274], Bassey (1998b) notes:

*It is important to stress the relationship between a fuzzy generalisation and the written report which supports it. The fuzzy generalisation on its own may be memorable, but has little credence. But read in conjunction with the research report it may gain high credence and in consequence may encourage others to act on it in their own school and circumstances.* (Bassey, 1998b: p. 23)

However, acknowledging the time-and-context-boundary nature of a singularity study, it seems to me that the notion of *‘high credence’* within singularity study claims to knowledge has a much more profound epistemological association with the criterion of credibility than it has with the notion of fuzzy generalisation which is predictive and probabilistic and which extrapolates beyond the boundary of a study of a singularity. I’m not saying that an educational researcher or educational action researcher involved in singularity studies should not engage with the notion of generalisability. My point, rather, is that the approach of extending the credibility of one’s work and knowledge claims, thereby extending the *potential* transferability and *potential* relatability of one’s findings, may be a more appropriate and more meaningful approach to adopt in singularity study enquiries than the development of the notion of ‘fuzzy generalisation’. In my view, the latter notion, on close analysis does not push the *probability*<sup>1</sup> of transferability and relatability forward from the viewpoint of the educational researcher in the ‘sending’ singularity study context.

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<sup>1</sup> With an accompanying healthy degree of uncertainty.

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I shared the above [pp. 271-275] as an attachment to an email to Michael Bassey on Thursday, December 3rd, 1998. The following is an excerpt from **Michael Bassey's email response on Friday, December 4th, 1998**:

*Dear James*

*Your comment that I have seen case study as leading to quite different ends is I think the right answer to your quarrel with my concept of fuzzy generalisation. Some case studies lead to the story (or picture) which is an extended account of the case, others can lead to the sound-bite conclusion in the form of a fuzzy generalisation. They serve different ends, the former leading to reflection on the part of the reader, the latter to action. Of course the reflection may lead to subsequent action (which I guess is its long term objective) and the action may lead to reflection (which we would all want). I guess what I am trying to do is to put a new kind of arrow in the quivers of the reflective practitioners - certainly not in their chests! --- Best wishes, Michael.*

This email excerpt prompts me to overtly state what I believe has been implicit in my argument thus far, that the notions of potential transferability and potential relatability are eminently open to informing and helping to form actions and praxes in other singularity-study and case-study contexts.

### 3. What's in My Work for Others?

#### *A Question Worth Asking*

Whilst I have some reservations regarding the term 'fuzzy generalizations' [pp. 274-276], I believe the question, '*What's in my work for others?*', is a question worth asking. However, before addressing this question, I think it is necessary to state that I see the following readers as my potential audience: university lecturers in education, teacher educators, primary school teachers, and secondary school teachers, who have an active interest in educational research, educational action research, and classroom research.

#### *Areas Where Readers Might Look For Ideas*

Further, although I have an epistemological commitment to not generalizing beyond the boundary of my enquiry [for example, only '*time- and context-bound working hypotheses (ideographic statements) are possible*' (Lincoln and Guba, 1985: p. 37)], there is a sense, perhaps, in which such a stance can hamper - or philosophically 'cramp' - a creative leap that one might take in suggesting areas of one's work where readers might look for ideas to import into their own practices, understandings, and situations: I take such a leap now.

**The following seven related areas constitute my educational theory:**

#### *1. Democracy and Teaching/Learning Communicative Activities*

In my 1994, 1995, and 1996 singularity studies, I have shown that the elicitation/creation, greater enactment, and evaluation<sup>1</sup> of teaching/learning communicative activities is one way of allowing students to have an input into teaching with a view to helping their learning. I found it a tense and challenging process to initiate and sustain at times but

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<sup>1</sup> In the 1994, 1995, and 1996 singularity studies, the sixth form students were involved in the elicitation/creation and evaluation of the teaching/learning communicative activities.

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overall it did lead to more relaxed and better learning classroom-atmospherics: in each of the studies the majority of the students felt that their learning improved [see, for example, pages 316, 332, and 345 of the Appendices].

### 2. *Social Justice and Helping the Most 'Disadvantaged' Students*

In my 1994, 1996, and 1997 singularity studies, I worked with sixth form students who had obtained the poorest examination results in mathematics and chemistry. This was one way in which I lived out a preferential option for the most 'disadvantaged' students - a social justice issue. In terms of gaining a fuller understanding of my changing practices, I have come to value the difference principle [page 199] operative within a liberal egalitarian approach to justice over the 'maximization' tenet of an utilitarian approach, *'which in one form or another has long dominated the Anglo-Saxon tradition of political thought'* (Rawls, 1987: p. 416). On a more personal note, I am challenged by Ricoeur (1991: pp. 35-36) to favour a logic of superabundance - *'Give because it has been given you'* - over a perverse interpretation of a logic of equivalence - *'I give in order that you will give'* - in my practice of social justice in the education workplace.

### 3. *A Sixth Form Student's Conceptual Vision in Mathematics and Some of Vygotsky's Work*

Singularity Study Four (1997) [Chapter Eleven] is a good example of how a teacher working closely with a critical friend [for example, page 73] can zero in on, and collaboratively gather evidence of, specific learning improvements of a sixth form mathematics student [Hugh], who, in terms of results, was one of the most 'disadvantaged' students. Hugh's metaphors for learning mathematics, following Selinger (1994), provide valuable insights into his feelings of self-efficacy in the subject. There is a useful mapping of some of Vygotsky's ideas into this study [e.g. the internal examiner found it interesting]: (a) the zone of proximal development, (b) the emphasis on social

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interaction (different to Piaget), and (c) the connection between learning and development of appropriate conceptual structures for understanding and solving problems.

### 4. *Relevance in an Irish Context*

The fact that I worked with final year sixth form students who were doing their Leaving Certificate Examinations in all four singularity studies means that my thesis can give some indication of what is possible in an educational action research study with 17-18 year-old secondary school students [boys] in the Republic of Ireland. As noted earlier [pp. 17-18], my work has relevance in an Irish context because, unlike a lot of 1980 and 1990 theses in Ireland, it examines my working context and professional actions to a significant degree and is a different mode of enquiry to the predominantly positivistic mode utilised. The recent publication of a paper (Finnegan, 2000)<sup>1</sup> is evidential of the relatability of my work and of the fact that I am making an original contribution in an Irish context.

### 5. *Creating My Own Educational Theory*

Connecting to the values of democracy and social justice in 1 and 2 above, but focusing on a teacher's voice, in Chapter Two I argue for the need of self-advocacy in creating/articulating a significant part of my own knowledge base in teaching [creating my own educational theory]. This is political language, I realize. But necessary, I believe. I maintain that reasonable and responsible self-advocacy is needed to gain greater structural acceptance, amongst the academy, of teachers' voices and capacities as creators of educational theories from their practices.

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<sup>1</sup> Finnegan, J. (2000) Utilising an Educational Action Research Approach: Facilitating More Democratic Actions in the Classroom, *Irish Educational Studies*, Vol. 19, pp. 120-138, is now in the public domain. A copy of this paper is included in the Appendices. The Editor of the annual journal of the Educational Studies Association of Ireland notes in the Preface: 'Finnegan, in the final paper situated in the secondary context, has the courage to take the considerable risk of holding his own practice of teaching Leaving Certificate students up to critical scrutiny and of involving colleagues and students as critical friends in the process. This action research study advocates the paper's substantive focus and method as means of improving the quality of teaching and learning as well as advancing democracy in schools' (Sugrue, 2000: p. ix).

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In a similar democratic vein, Dadds (1995, 1998) argues for '*democratic validation*', where the voice of '*the practitioner researcher*' as well as other voices can '*be heard in the academy's validation discourses*' (Dadds, 1998: pp. 45-46).

### 6. *A Particular Living Educational Theory Study and Standards of Judgement*

In connection with the above, my thesis is a particular example of a living educational theory study and may be of interest to readers, as an educational action research epistemology, especially with regard to the central standards of judgement which I proffer<sup>1</sup> for judging my practices, my account and the credibility/validity of my claims to knowledge. These criteria are characteristic features of my work<sup>2</sup> and include my methodological, educational, and social standards of judgement [pp. 45-56].

### 7. *Social Philosophy Informing My Fuller Understanding of My Educational Practice*

Apart from attempting to improve my practice, a central aspect of my thesis, following the action research influence of Carr and Kemmis (1986: p. 162), is improving the '*rationality and justice*' of my understandings of my changing practices [page 42 and page 44]. One of the research questions in my thesis that has impacted on me most at a feeling level is '*How can love enable justice to see rightly in my practice?*'. I really hesitated to use the word '*love*', but Ricoeur (1991) helped me to justify its usage. I think it is also relevant to note Rawls's (1971) claim that '*Justice is the first virtue of social institutions*' (Rawls, 1971: p. 3). Page 222 states my own practical vision for acting more justly in the education workplace. In developing this understanding, as well as drawing on my own practice and the work of Eisner (1996) [page 271] and Vygotsky [page 266], I have drawn on the social philosophical understandings of Cixous (1981), Giddens (1979), Rawls (1971 and 1993), Ricoeur (1991), and Sen (1992). My point here is that social philosophy can be worked into an action research enquiry at the level of contributing to a fuller

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<sup>1</sup> In an era of high modernity [Footnote 2, page 42] and postmodern challenge.

<sup>2</sup> Footnote 1, page 56, is relevant here.



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understanding of one's changing educational practice. In my situation, because of the trade-off incurred in changing my social-educational practice in January 1998 from teaching to writing a thesis [Appendices (page 296)], whilst I have shown that social philosophy can enhance my understanding of my changing practice, I clearly haven't shown that social philosophy can change my teaching practice for the better. Nonetheless, I think that the connection I have established between social philosophy and educational practice in my thesis, in the sense of contributing to a personal vision for social justice in the education workplace, will be of interest to some educational philosophers. Another interesting aspect, I think, is that my work helps to extend the social justice dimension of a living educational theory approach to action research. Whitehead (1993: p. 118) has noted that the '*integration of social understandings does need to be strengthened*' in the action research case-study collection at the University of Bath.

### *Closure*

My thesis and the particular dynamic way in which I theorise from and through my educative relations<sup>1</sup> is one example of how I, as an action researcher and as a teacher, can respond to Walker's (1995 : p. 24) plea for '*theoretically informed accounts*' in educational action research. However, it is important to recognize that the democracy / social justice / conceptual vision pattern of my work - the 'green shoots' of my educational theory (Lomax, 1994: p. 121) - emanates predominantly from my 1994-1997 singularity studies and educational practices in the classroom.

My original set of standards of judgement [pp. 45-56]<sup>2</sup> proffered in Chapter Three are central to appreciating the above seven related areas [pp. 277-281] as constituting my educational theory. In adopting a living educational theory approach to action research in my enquiry as I create my own educational theory, I hope I have demonstrated originality of mind and critical judgement.

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<sup>1</sup> See my educative-relational standard of judgement on page 53.

<sup>2</sup> My originality, in this context, is in the particularity of the criteria and the originality of the set.

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# Appendices

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## Appendices

### Writing My Thesis - Submission One [Jan 6 1998 - Jul 21 1999]

#### Context

I took study leave from teaching in order to create enough time to write up my thesis thematically. Clearly, this was a change in my social practices. Nonetheless, at a minimal level, my argument is that my work [the four singularity studies and the two submissions of my thesis] qualifies as action research in that it satisfies three conditions judged as '*individually necessary and jointly sufficient for action research to be said to exist*' (Carr and Kemmis, 1986: p. 165): (i) a social practice susceptible of improvement, (ii) a spiral of action-reflection cycles [which includes Thesis Submissions One and Two], and (iii) involvement of those responsible for, and affected by, the social practices.

#### Action-Reflection Cycle

#### Problem

In a 1993 international survey of constraints on action research in educational settings among 40 project directors in the USA, UK and Ireland, '*lack of time*' ranked first (McKernan, 1996: p. 44): McKernan also notes that this had been highly predicted in the literature by Stenhouse (1981: p. 111):

*the most serious impediment to the development of teachers as researchers - and indeed as artists in teaching - is quite simply shortage of time.*

My own action research enterprise fitted into this very real and serious pattern of lack of time. I felt that I needed a substantial amount of time to write up my work thematically but my time investment in teaching was blocking me from achieving this end<sup>1</sup>. Prompting me further into investing more time into writing up my work thematically was Professor Hugh Lauder's **December 5th 1997** response to some of my work:

*Of the two studies I read the first [a piece of writing comparing the second edition of my 1994 singularity study with the first edition of my 1996 singularity study] did not handle some key concepts like democracy, social justice and the trade-offs incurred in any ethical decisions made at the level expected of a Ph.D.*

In short, two central problems facing me in December 1997 were: (i) lack of time and (ii) discerning significant themes in my work so that I could write up my thesis thematically. An additional problem was that I hadn't yet succeeded in fully passing my transfer seminar.

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<sup>1</sup> Lomax's notion that the '*patterns and themes are the "green shoots" of theory that is grounded in the events you describe*' (Lomax, 1994: p. 121) prompted me into utilizing a thematic approach in more fully understanding my work and when writing my thesis.

## Appendices

### Imagined Solutions

#### *Creating Writing Time*

I decided to take study leave from January 6th, 1998 until August 31st, 1999 [submitting my thesis in May 1999]. Thus, my social practice changed from teaching and educational action research to writing up an educational action research thesis. For me, this involved a trade-off between (i) teaching full-time and not having sufficient time to write a thesis and (ii) leaving teaching temporarily in order to construct an action research thesis within a reasonable amount of time. In effect, I sacrificed teaching practice as a source of income (and some possible future reflective practice!) in order to dissolve, what was for me, a powerful structural time constraint.

#### *Discerning Themes and Patterns in My Work*

I wrote the following to Hugh Lauder in **early December 1997**:

*I see more democratic action and an incremental improvement in social justice as related themes forming part of the pattern of my work.* [Data Archive]

Nonetheless, I felt it would be a good idea to rewrite my four singularity studies in order to further familiarise myself with my own work but, in particular, to more accurately discern patterns and themes in my work, especially in regard to (i) values I was trying to live out more fully in my practice (teaching and writing) and (ii) criteria or standards of judgement that I felt were central for judging the credibility/validity of my claims to knowledge.

### Implementation of Imagined Solutions

I rewrote the four singularity studies between January 13th and March 6th 1998. This corresponded to walking through the four fields on one side of the 'valley metaphor' mentioned on page 75 of the thesis.

I had a lunch-time meeting with Jack Whitehead and Hugh Lauder on January 30th 1998, discussing my work, and on **February 2nd 1998** I wrote to Hugh and Jack stating that I would address the following issues in my theory chapter: (i) teaching/learning communicative activities, (ii) more democratic action, (iii) acting more justly, (iv) the notion of conceptual vision, (v) more dialogue, (vi) the use of metaphor, and (vii) statistics. My point here is that I had a pretty good sense of direction for my writing at that stage - two months before I began writing a Development of Theory Chapter. I wrote the Development of Theory Chapter between March 30th 1998 and June 3rd 1998 around the headings of: (a) More Democratic Actions in the Classroom, (b) More Socially Just Actions in the Classroom, (c) A Sixth Form Student's 'Conceptual Vision' in Mathematics, and (d) Creating/Articulating a Significant Part of My Own Knowledge Base in Teaching [Creating My Own Educational Theory].



## **Appendices**

### *Key Respondents*

I obtained feedback from Hugh Lauder and Jack Whitehead on my Development of Theory Chapter on June 23rd, 1998 and feedback from Pat D'Arcy on June 25th, 1998.

Stating the remainder of the 'Implementation' phase of the action-reflection cycle briefly, I completed the writing of my thesis between September 15th, 1998 and April 15th, 1999, obtaining further feedback from the above three key respondents during this time with Kate Hawkey of the University of Bath acting as Reader for the first main draft of my thesis on March 9th, 1999. I submitted my thesis on May 5th, 1999 and had my viva voce on July 21st, 1999.

### **Evaluation**

#### *Development of Theory Chapter*

On July 3rd, 1998 I was informed that I was '*regarded (by the Research Committee) as having passed (my) transfer*' on the basis of my Development of Theory Chapter. This 'Chapter' later became Chapters Two, Five, Six, and Eight of my present thesis.

I believe it is also important to note that Chapter Nine articulates some of my responses to Professor Hugh Lauder's June 1998 criticisms of my Development of Theory Chapter.

#### *Remainder of Thesis*

As a key concern in these summaries is showing that an action-reflection cycle was operative within the social practice of writing my thesis, I'll mention only two other issues here. Firstly, Kate Hawkey, as Reader, felt there could be more signposting in parts of my thesis. I addressed this problem by writing a couple of relevant paragraphs and adding more subheadings. Secondly, both Pat D'Arcy and Kate Hawkey felt there was a lot of unnecessary repetition of my then Final Chapter. I rectified this somewhat but not sufficiently.

#### *My Viva Voce - July 21st, 1999*

I did not fail my Ph.D., nor was an M.Phil. recommended. However, while both of the examiners felt there was a Ph.D. there, I did not pass my viva. See the 'Problem' phase of the next action-reflection cycle for some of the central evaluative aspects of the viva voce.

### **Modifications**

See the 'Imagined Solutions and Their Implementation' section of the next action-reflection cycle for the ways in which I modified my thesis in response to some of the criticisms of the External and Internal Examiners.

## Appendices

### Writing My Thesis - Submission Two [Aug 1999 - Mar 2000]

#### Context

I returned to full-time teaching on August 31st, 1999 with a list of personally-developed tasks for modifying my thesis which I would try to accomplish by the end of February 2000.

#### Signpost

My purpose in proffering this action-reflection cycle summary of the working of my second submission is to overtly state (i) that this working is a social practice and (ii) that it qualifies as action research. There's no need to go into too much detail: I'll be brief.

#### Problems

The main problem for the Examiners [and, therefore, for me!] at my viva was that my abstract did not sufficiently explain what I had done in my thesis. A second problem, particularly for the External Examiner, was that there was a lot of unnecessary repetition [especially towards the end of the thesis (own comment)] and irrelevant detail in my thesis. Another problem for the External Examiner was that my report did not contain a summary of the singularity studies with exemplifications of full action-reflection cycles (Whitehead, 1993: p. 54) from the studies. Further, with regard to the teaching/learning communicative activities on page 78 and the means in Table S1.16 on page 100, the External Examiner requested more background information and explanation.

[Both examiners, I believe, made a great effort to be as fair as possible on the day. After the viva, the two examiners gave me the notes they each had made out before the viva. These notes have been helpful.]

#### *Understanding These Problems as 'Living Contradiction' Elements of My Practice*

In short, in my first submission I was not living out to a sufficient level of proficiency (for my audience and myself) three of my social standards of judgement [pp. 54-55] and one of my methodological standards of judgment [pp. 47-48]. In regard to my social criteria: (i) I needed to make my report more comprehensible, (ii) I needed to supply some more evidence for some of my claims, and (iii) some of my statements were inappropriate and could be modified or dumped, depending on their importance. In relation to the methodological standard of judgement, I needed to give full examples of the action-reflection cycle from my work.

## Appendices

### Imagined Solutions and Their Implementation

#### 1. *New Abstract*

On July 22nd 1999, the day after the viva, I began working on a new Abstract and with helpful input from Jack Whitehead and Paul Denley of the University of Bath, I eventually came up with an Abstract on August 1st 1999 which I felt more accurately explained my work. [I further modified my new Abstract after dialogue with JW on Nov 19th, 1999 and later again in February 2000.]

#### 2. *Removing Unnecessary Repetition and Irrelevant Detail*

Between August 2nd and August 10th 1999, I removed 15,000 words from my thesis and 4000 words from the Footnotes. In relation to '*unnecessary repetition*', one of the flaws with the first submission of my thesis<sup>1</sup> was that I often quoted a piece again when referring back to a previous part of the thesis. Overall, it was a mistake of style. In relation to '*irrelevant detail*', sometimes I included some personal or other details which may have been of interest to the reader, but weren't really relevant for carrying my arguments forward. The External Examiner had originally written '*There is a sense of audience, but no recognition that the audience may be bored by the detail and the repetitions*'.

#### 3. *New Material Added to the Appendices*

I added more material to the Appendices from my singularity studies in order to lend evidential support for some of my statements in the main body of the thesis. For example: (i) pp. 302-308 of the Appendices give relevant background information for the derivation of the eight teaching/learning communicative activities mentioned on page 78 of the thesis; (ii) pages 314 and 317 of the Appendices give the questionnaire and the table of ratings which led to the overall students' mean ratings in table S1.16 [page 100 of thesis].

#### 4. *Ten Tasks When Back Teaching - The Way Forward*

In late August 1999 I drew up the following ten tasks for rewriting my thesis:

- (i) Summaries of the singularity studies.
- (ii) Examples of action-reflection cycles<sup>2</sup>.
- (iii) New Introduction to the then Final Chapter.
- (iv) Elaborate on Abstract - Keep it short.
- (v) Further fine-tuning of thesis to blend with *fuller understanding of changing practices*.
- (vi) What's in it for others? Make this more overt.
- (vii) Fine-tuning of summary at the start of the Introduction.
- (viii) New Foreword.

---

<sup>1</sup> Particularly towards the end of my thesis.

<sup>2</sup> I combined (i) and (ii) and am nearing completion of this combined task today - October 16th 1999. I expect to complete tasks (iii), (iv), and (v) during my mid-term break, 25th-29th October 1999.

## Appendices

- (ix) Internal references and Appendices.
- (x) References.

## Evaluation

Whilst recognizing, implementation-wise, that I am at the stage of completing (i) and (ii) above as a combined task, the following are some my October 17th 1999 evaluative comments regarding the second submission of my thesis:

### *My New Abstract*

My new Abstract much more correctly prioritises my knowledge claims, adding two significant claims relating to (a) a particular set of standards of judgement which I believe are central to judging the credibility/validity of my claims to knowledge, and (b) becoming a more reflective practitioner as I gain a fuller understanding of my changing practices.

### *More Fully Living Out Standards of Judgement*

In relation to social criteria, in terms of language use that places an emphasis on reaching an understanding with an other [pp. 54-55 of thesis], I believe: 1, 2, 3, and 4 (i)-(viii) above will help make my report more comprehensible; 3 will help provide more evidential support for some of my claims; and 2 will help bring about more appropriateness in some of my written communications [for example, before the viva, the External Examiner wrote that my style was '*repetitive, pedantic, and often verging on the pompous*'].

In relation to a central methodological standard of judgement in my work - the action-reflection cycle [pp. 47-48 of thesis], the summaries of my four singularity studies and my two thesis submissions with the action-reflection cycles operative therein [pp. 61-74 of thesis and pp. 295-300 of the Appendices] provide ample evidence that I am more fully communicating this standard of judgement in the second submission of my thesis.

Finally, in relation to my dialogic standard of judgement [top of page 53 of thesis], I believe that, in responding to some of the written and spoken comments from my viva voce examiners, I am more fully engaging in higher quality dialogic reflections with others in the social practice of writing my thesis.

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### Contents for Singularity Study One (1994)

|  | <u>Page</u> |
|--|-------------|
| Why did I begin an enquiry?  | 1           |
| The Problem  | 2           |
| (a) What was my concern?   | 2           |
| (b) Why was I concerned?   | 3           |
| (c) How did I gather Evidence 1?   | 3           |
| Imagined Solutions   | 7           |
| Implementing Imagined Solutions and Gathering Further 'Evidence'           | 12          |
| Evaluating My Actions (Further Analysis Of Classroom Research Information) | 21          |
| (a) Some Concerns from the Action Research Cycle to Date                   | 21          |
| (b) Developing an Empathic Statistics                                      | 29          |
| (c) The Students' Learning and My Response to Their Suggestions for Help   | 31          |
| (d) Feedback on My Utilization of an Empathic Statistics                   | 38          |
| (e) Experiences of Healthy Tension   | 40          |
| (f) Value Emergence Over Time  | 42          |
| (g) Some Methodological Issues in Validating My Research                   | 45          |
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### Originating Questionnaire [Singularity Study One (1994)]

**QUEST1**

**08-03-1994**

- Q.1 What Mark Did You Get?  
Q.2 Are You Satisfied With This Mark?  
Q.3 Are You Capable Of A Higher Mark?  
Q.4 Do You Want To Get A Higher Mark?  
Q.5 Do You Read Your Notes Twice Between One Chemistry Class And The Next?  
Q.6 How Difficult (Or Easy) Do You Find Chemistry Compared With Other Subjects?  
Easier (Less Difficult) / Same / More Difficult (Less Easy)  
Q.7 How Much Do You Like Chemistry Compared With Other Subjects?  
Like It Less / Same / Like It More
- Q.8 In General, Are You Satisfied With Your Quality Of Learning In Classrooms (All Subjects)?  
Q.9 In Particular, Are You Satisfied With Your Quality Of Learning In the Chemistry Class?  
Q.10 If Your Answer To Q.9 Is No, In What Ways Could You Bring About An Improvement In Your Quality Of Learning In The Chemistry Class?
- Q.11 In General, Are You Satisfied With The Quality Of Schoolwork You Do At Home (All Subjects)?  
Q.12 In Particular, Are You Satisfied With The Work You Do In Chemistry At Home?  
Q.13 If Your Answer To Q.12 Is No, In What Ways Could You Bring About An Improvement In Your Quality Of Chemistry Work At Home?
- Q.14 In General, Are You Satisfied With The Quality Of Teaching In St. John's?  
Q.15 In Particular, Are You Satisfied With The Way In Which Chemistry Is Taught?  
Q.16 If Your Answer To Q.15 Is No, What Changes Would You Find Helpful In The Way In Which Chemistry Is Taught?

The questionnaire may seem a little long but my intention was to yield as much information as possible in gathering 'Evidence 1' (part of the first step in the action-reflection cycle) and in order to minimise backtracking later.

Having studied Hargie, Saunders and Dickson (1987: pp. 58-86), I was familiar with questioning skills and found this beneficial in designing QUEST 1. There are sixteen questions in all, only three of them (Q.10, Q.13, and Q.16) being open. Most of the closed questions are at the start of the questionnaire (Q.1 - Q.7). The closed, closed, open pattern in Qs 8,9, and 10 is repeated in Qs 11, 12 and 13 and also in Qs 14, 15 and 16, my view being that the students' learning depended predominantly on:

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- (i) their quality of learning in the classroom,
- (ii) their quality of work at home, and
- (iii) my quality of teaching in the chemistry class.

For the purposes of my enquiry I was particularly interested in the students' levels of satisfaction for Qs 8, 9, 11, 12, 14, and 15. However, I was primarily interested in their responses to Q.16, '*What changes would you find helpful in the way in which chemistry is taught?*' as this would hopefully point to possible ways in which I could improve my teaching for this group of sixth form chemistry students.

## Students' Responses [Singularity Study One (1994)]

Q. 16 was, *'What changes would you find helpful in the way in which chemistry is taught?'* I will write H,P, or F (Honour, Pass, or Fail) for the student depending on his trial Leaving Certificate result. The students will be numbered 1-16. These responses help me to answer one of the central questions in my first study of a singularity, *'How do I improve this process of education here?'* (Whitehead, 1993: p. 57).

- **H1** 'taught in a way that makes it harder to understand by those who have lesser capabilities in the subject. You are not teaching in third level!'
- **H2** 'more students out at the board'  
'... go slowly and make sure everyone understands'  
'Do less examples.'  
'Not groupwork in the ordinary classroom'  
'Practicals will not help our work to improve.'  
(I had suggested groupwork and practicals.)
- **P3** 'In chemistry, I think it's me who needs to work more.'  
'suggestion - In class go through things like we were 6 year olds - Explain in simpler terms the more difficult sections.'
- **P4** 'I would like if things were explained more clearly in class and not stray from the point.'
- **P5** 'Have more student participation in class.'
- **F6** 'Put greater emphasis on topics that are likely to come up in the exam.'
- **F7** 'I find it difficult to keep up with what is being taught while at the same time trying to learn what was done last. I think it has to be broken down simpler because it is a difficult subject.'
- **F8** 'Go through more examples. Give more examples.' (Compare with H2)  
'Give notes on board more clearly.'  
'Keep doing sample papers.'
- **F9** 'Everyone should write down the problem areas and then the teacher should do his/her (?) best to try and solve it, also groupwork (compare with H2) - people with bad results learning off those who are honouring it.'
- **F10** 'I haven't answered the above (Q.15) as I am neither satisfied nor dissatisfied with the way in which chemistry is taught. I think that if you were to take a slower approach to your teaching - as you have seen, most/many students have failed showing that pupils can't keep up.'



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- **F11** 'concentrate more on past examination questions now that we have the papers'
- **F12** 'It is not that I am dissatisfied with the way chemistry is taught but I feel it could be improved. Spend more time on certain topics e.g. the organic chemistry. The total blame (for 13 out of 21 students failing) does not lie with the teacher but all things can be improved on.'
- **F13** 'It's not the way that it's taught. It's just that I can't understand many of the equations etc, so I cannot remember it.'
- **F14** 'Read out of the book more.'  
'Explain certain things more clearly.'  
'Give an expression to the class that it is O.K. to ask a question.'  
'Small test on one chapter every week.'  
'For(sic) now to the Leaving Certificate instead of doing exam book go back and do revision from fifth year at the start of the book.'(compare with F8 and F11)
- **F15** 'You go into things in too much detail and do it too quickly for me to follow you.'
- **F16** 'More detailed explanation.'(compare with F15)

The following responses to QUESTCH [a follow-up questionnaire enquiring into the students' homework practices: see Appendices (page 309)] provided the remainder of 'Evidence 1':

- 'Only do written homework and nothing else'  
'unless given written homework, nothing done'
- 'Some nights I have a lot of homework and when I am finished it there is usually no time left for study (reading notes) or revision.'
- 'It's very hard to motivate oneself whenever there is a week between classes. By the weekend, I have generally forgotten about chemistry or I don't want to remember.'
- 'Don't study chemistry very often. As classes are so far apart Tues-Mon ----- often forget what I learned over the week.'

It was also interesting that H2 (Columba - a prefect) wrote on the back of his QUEST 1 questionnaire:

- 'Why did 13 out of 21 people fail the chemistry mock exam?'  
'The general feeling of people coming to the class is bad - lack of interest.'  
'There is a full week between classes every second week. It is really hard to keep an interest or to remember what we are doing.'

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The class had been given the questionnaire, QUEST 1, on Tuesday, March 8th. I began journalising everything in connection with action research in mid-February and consequently was reflecting on the students' responses a good lot. **After carefully reflecting on and analysing the above responses I chose the following as my main imagined solutions with this group of twenty-one sixth form chemistry students:**

In each chemistry class I would try to:

- |   |    |
|---|----|
| (1) Check each individual's Homework (see that an attempt was made) ----- | CH |
| (2) use the Students' Solutions to the homework -----                     | SS |
| (3) Invite Questions from the students -----                              | IQ |
| (4) give Written Homework for the next day -----                          | WH |
| (5) Use the Book more -----   | UB |
| (6) Go more Slowly -----  | GS |
| (7) Explain more Clearly -----  | EC |
| (8) Check students' Understanding -----                                   | CU |

### *Sources of the Eight 'Teaching/Learning Communicative Activities'*

**(1) Checking each individual's Homework (CH), and (4) Written Homework for the next day (WH) emanated from:**

- 'Only do written homework and nothing else'  
'unless given written homework, nothing done'
- 'Some nights I have a lot of homework and when I am finished it there is usually no time left for study (reading notes) or revision.'

**(2) Students giving the Solutions to the homework (SS) was prompted by:**

- 'Have more student participation in class' (and my own desire to involve the students more in the chemistry lesson)

**(3) Invite Questions from the students (IQ) was in response to:**

- 'Give an expression to the class that it is O.K. to ask a question.' Also, 'ask more questions' arose five times in the students' responses to question 10 where they were asked in what ways they could change their own quality of learning in the classroom (Singularity Study One: pp. 5-6).

**(5) Use the Book more (UB) stemmed from:**

- 'Read out of the book more.'

**(6) Go more Slowly (GS) originated in:**

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- 'go slowly and make sure everyone understands'
- 'I think that if you were to take a slower approach to your teaching'

**(7) Explain more Clearly (EC) grew from:**

- 'suggestion - In class go through things like we were 6 year olds - Explain in simpler terms the more difficult sections.'
- 'I would like if things were explained more clearly in class and not stray from the point.'
- 'Explain certain things more clearly.'
- 'More detailed explanation.'

**(8) Check students' Understanding (CU) came from:**

- 'Have more student participation in class' and from my own desire to further nurture an empathic understanding of my students' specific understandings in chemistry.

|   |
|---|
| <b>Implementing Imagined Solutions and Gathering Further 'Evidence'</b> |
|---|

### *Raising My Own Consciousness*

On one level I carried out an 'own evaluation'. The purpose here was to raise my own consciousness regarding my practice. I used the codes and ticked, Xed and question-marked as appropriate at the end of the class or later that day when journalising. I never waited until the next day.

**Table S1.4. Own check on the eight teaching/learning communicative activities.**

|           | March 28th | March 29th | April 12th | April 13th | April 27th |
|-----------|------------|------------|------------|------------|------------|
| <b>CH</b> | ✓          | ✓          | ✓          | ✓          | ✓          |
| <b>SS</b> | ✓          | ✓          | ✓          | ✓          | ✓          |
| <b>IQ</b> | X          | ✓          | ✓          | ✓          | ✓          |
| <b>H</b>  | ✓          | ✓          | ✓          | ✓          | ✓          |
| <b>UB</b> | X          | ✓          | X          | X          | X          |
| <b>GS</b> | ?          | ✓          | ?          | X          | ?          |
| <b>EC</b> | ✓          | ✓          | ✓          | ✓          | ?          |
| <b>CU</b> | ✓          | ✓          | ✓          | ✓          | ?          |

- (1) Check each individual's Homework (see that an attempt was made) ----- **CH**
- (2) use the Students' Solutions to the homework ----- **SS**
- (3) Invite Questions from the students ----- **IQ**
- (4) give Written Homework for the next day ----- **WH**
- (5) Use the Book more ----- **UB**
- (6) Go Slower ----- **GS**
- (7) Explain more Clearly ----- **EC**
- (8) Check students' Understanding ----- **CU**

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### *Students' Stated Problem Areas in Chemistry*

I invited the twenty-one sixth form chemistry students to state their problem areas on Tuesday, March 15th, exactly one week after QUEST 1. These were:

(i) volumetric analysis (ii) thermochemistry (iii) electrolysis (iv) molarity (v) pH (vi) indicators (vii) crystals (viii) oxidation/reduction.

We immediately began work on volumetric analysis. Their written homework for the next class (the following Tuesday) was a 1991 and a 1992 Leaving Certificate Examination question in this area. I have come to believe (and not only during this research) in using students' ideas in shaping a revision and to act quickly (I believe the psychological health in fast feedback is well recognised in commonsense knowledge). We didn't go onto a new area until all of the suggested topics were covered.

### *Raising the Students' Consciousness*

Valuing triangulation I gave the students three feedback sheets, FB1, FB2, and FB3. It was quite deliberate giving FB1, FB2, and FB3 in March, April and May respectively. *They were given at the end of a double period without prior notice.* This was one of the ways in which I attempted to raise the students' consciousness regarding the improvements I was trying to bring about in my teaching practice.

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### QUESTCH (15-03-1994): A Follow-Up Questionnaire Enquiring into the Students' Homework Practices [Singularity Study One (1994)]

- Q.1 What Are Your Reasons For Not Reading Your Notes Twice Between One Chemistry Class And The Next?
- Q.2 Overall You Seem Dissatisfied With The Schoolwork You Do At Home (All Subjects) - Why Is This?
- Q.3 In Particular, You Are Not Satisfied With Your Quality Of Learning In Chemistry At Home - What Are Your Reasons For This?
- Q.4 Do You Honestly Believe That Reading Your Notes Twice Between Classes Would Help You Understand And Remember Much More Clearly The Chemistry We Do In Class?

Feedback from Critical Friend, Joe English (26-04-94)  
[Singularity Study One (1994)]

*June 1994 Report*

I had recently studied the 'principles of classroom observation' in David Hopkin's book (Hopkins, 1993: pp. 76-90) and realised the importance of fast feedback. Consequently, we met the next day in Joe's classroom (next door to mine) and talked for about 15 minutes. It was a two-way discussion with me giving some of my interpretation firstly. I asked Joe to write out a paragraph for me on the observation.

Journalling later that day I wrote 'overall Joe was impressed with the *work rate of the class* and my *relaxed approach* - I would be more nervous in a straightforward teaching situation - I have opened the classroom door to an observer (this was also one of the purposes of the exercise) - need to open it further'.

The following day Joe gave me the following 'paragraph':

*Observations from observing James Finnegan's class on Tuesday 26/04/1994  
[10.00 a.m. - 10.10 a.m.]*

*(1) When I came in, I was very pleased just to see group work going on - it's such a rarity!*

*(2) Despite having practised scanning in one of my own classes beforehand, I came in with pen at the ready expecting to tick and to be busy ticking but it did not turn out that way. I suppose it's just part of the teacher's job - to be busy at tasks i.e. if you're not busy you're not working productively! (note the echo in 'don't have to keep busy' - own journal entry).*

*(3) Almost immediately, I saw how different groups had their own unique characteristics. One group was busy writing, another working almost independently of each other, whilst yet another had a lot of discussion. I have talked to James about this (I found this observation enlightening).*

*(4) In no way did I get the impression that the class was stage-managed for the exercise, yes, organisation was excellent (but then I've come to expect such standards from James!) but activities went on very smoothly and efficiently.*

*(5) Early on, I did feel that pupils were conscious of my presence but as the class went on I think this caused less of a problem.*

*(6) I observed also James' interventions. Whilst not pupil initiated, I would best describe these interventions as cathartic in the sense that they were made in an unobtrusive*

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*manner and always with 'genuine help/guidance/concern' in mind. I hope that pupils appreciate this excellent empathic approach.*

*(7) Overall, I got the impression that group work was effective as a study revision strategy. Okay - Group I - I felt were working more as individuals rather than constant interaction but if group work is a means to an end then they appeared very content and were certainly task-orientated.*

*(8) I enjoyed the exercise - got me thinking about my own teaching situations. Joe.*

Feedback from Critical Friend, Paraig O' Dowd (03-05-94)  
[Singularity Study One (1994)]

*June 1994 Report*

*Paraig's Comments*

**Initial Classroom Observation**

*Good climate in class (work being done, relaxed discipline, certain noise level allowed), the groups were dispersed and had enough distance apart - planning done.*

*The talking was coming across as on-task, no daydreaming, no one physically bothering anyone.*

**Min 1:** *all at task*

**Min 2:** *I wondered had they enough work to do*

**Min 3:** *a lot of walking around - beaker and washing*

**Min 4:** *student came to G3 looking at work*

**Min 5:** *student from G2 at G7 (Niall) and waited there awhile until noticed by teacher - suggestion about paper made by teacher (white paper under conical flash to highlight colour change)*

**Min 6:** *students looking for paper*

**Min 7:** *all at task*

**Min 8:** *G5 to G4 at sink, G2 pouring back - 'right bottle?'  
(Niall asked me this after pouring the contents into the bottle!)*

**Min 9:** *a lot of questions from students*

*'What do we do when finished?'*

*'take down figures?'*

*'What do we do now? - bottle question*

**Min 10:** *G1 wandering around (Rory)*

**Comments:** *Could the students write down procedure?  
Do students know all instructions at start?*

[They already had written procedures for the demonstrations. I acknowledge, however, that the students could have been given clearer instructions at the start. These had been a little rushed because I wanted the students started when Paraig came in for his observation but even if no observations were going on I feel there is room for greater clarity. I might also add that students sometimes don't listen and instructions have to be repeated later. Niall and Rory were late for class and I didn't start until everyone was present.]



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### **Class Interaction**

*James showed a willingness to help his pupils and wasn't just walking around as a supervisor. I was only in for 10 mins so it was difficult to see or evaluate James' interaction with the pupils. The climate of the class suggests that the pupils accept James as a teacher who can teach them. There was also a relaxed atmosphere in the class.*

[In the above (May 1994), I was at the very early stages of opening the social practices in my classroom to observations by critical friends. See page 348 of the Appendices.]

# Appendices

## **FINAL QUESTIONNAIRE (FQ) Part I (16-05-1994)**

**Between Tuesday 08/03/94 and Tuesday 17/05/94**

| Ratings            | -5                | -3                     | -1                   | 0    | 1                 | 3                   | 5              |
|--------------------|-------------------|------------------------|----------------------|------|-------------------|---------------------|----------------|
| Verbal Description | disimproved a lot | disimproved a good bit | disimproved slightly | same | improved slightly | improved a good bit | improved a lot |

- (1) Are you satisfied with your quality of learning in classrooms (all subjects)?
- Yes or No ☐ Rating ☐
- (2) Are you satisfied with your quality of learning in the chemistry class?
- Yes or No ☐ Rating ☐
- (3) Are you satisfied with the quality of schoolwork you do at home (all subjects)?
- Yes or No ☐ Rating ☐
- (4) Are you satisfied with the work you do in chemistry at home?
- Yes or No ☐ Rating ☐
- (5) Are you satisfied with the quality of teaching in St. John's College?
- Yes or No ☐ Rating ☐
- (6) Are you satisfied with the way in which James Finnegan teaches you chemistry?
- Yes or No ☐ Rating ☐

Please give ratings (i.e. -5,-3,-1,0,1,3,5) for the following areas for the chemistry class:

- |     |  |    |                          |
|-----|--|----|--------------------------|
| (A) | The homework was checked (Each student's).           | CH | <input type="checkbox"/> |
| (B) | Students' solutions to homework were given.          | SS | <input type="checkbox"/> |
| (C) | The students were invited to ask questions.          | IQ | <input type="checkbox"/> |
| (D) | Written homework was given for the next day.         | WH | <input type="checkbox"/> |
| (E) | The teacher is using the book more.                  | UB | <input type="checkbox"/> |
| (F) | The teacher is going more slowly.                    | GS | <input type="checkbox"/> |
| (G) | The teacher is explaining more clearly.              | EC | <input type="checkbox"/> |
| (H) | The teacher is checking the students' understanding. | CU | <input type="checkbox"/> |
|     |  |    | <input type="checkbox"/> |

Name: \_\_\_\_\_

Score in trial I. cert. (H,P,F): \_\_\_\_\_

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## FINAL QUESTIONNAIRE (FQ) Part II (16-05-1994)

Between Tuesday 08/03/94 and Tuesday 17/05/94

| Ratings     | 1      | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9         | 10        |
|-------------|--------|------|------|------|------|------|------|------|-----------|-----------|
| Verbal      | dismal | very | poor | okay | good | good | very | very | excellent | excellent |
| Description |        | poor |      |      |      |      | good | good |           |           |

### Group Work in the chemistry class (the day J. English came in)

- (1) Was the group work worthwhile for you? Yes or No ☐
- (2) In what ways?

- (3) Please give ratings for: Self ☐ Group ☐  
That is, rate the quality of your work (Group Work in classroom)
- (4) Would you prefer work with friends when in groups?

- Yes / No/ Doesn't matter
- (5) If Yes/No please suggest why/why not:

### Practical Work in the chemistry class (the day P. O'Dowd came in)

- (1) Was the practical worthwhile for you? Yes or No ☐
- (2) In what ways?

- (3) Please rate the quality of your work: Self ☐ Group ☐  
(that is, for the practical)
- (4) Would you prefer work with friends when doing a practical? Yes / No/ Doesn't matter

- (5) If Yes/No please suggest why/why not:

Name:

Score in trial 1. cert. (H,P,F):

- Will you be doing ordinary level or higher level physics/chemistry in summer?

## Appendices

### Student Satisfaction: Responses to Final Questionnaire, FQ (Q.1 - Q.6) [Singularity Study One (1994)]

**Table S1.21. Sixth form student responses to the final questionnaire, FQ (Q.1-Q.6).**

| Name                | Learning Classroom General |    | Learning Classroom Chemistry |      | Learning Home General |     | Learning Home Chemistry |      | Teaching General             |      | Teaching Chemistry |      |
|---------------------|----------------------------|----|------------------------------|------|-----------------------|-----|-------------------------|------|------------------------------|------|--------------------|------|
| Paul H.             | N                          | 0  | Y                            | 1    | N                     | -3  | N                       | -1   | Y                            | 0    | Y                  | 1    |
| Columba B.          | N                          | 0  | Y                            | 5    | N                     | 3   | Y                       | 5    | N                            | 0    | Y                  | 3    |
| Darren H.           | N                          | -3 | Y                            | 5    | N                     | -3  | Y                       | 3    | N                            | -3   | Y                  | 5    |
| John D.             | Y                          | 3  | Y                            | 1    | Y                     | 1   | Y                       | 1    | Y                            | 1    | Y                  | 3    |
| Ronan M.            | Y                          | 3  | Y                            | 3    | N                     | 1   | Y                       | 5    | Not Sure                     | 0    | Y                  | 0    |
| Kelvin K.           | N                          | -1 | N                            | 0    | Y                     | 0   | Y                       | 1    | N                            | -1   | N                  | 0    |
| Patrick D.          | Y                          | 5  | Y                            | 5    | Y                     | 3   | Y                       | 5    | Y                            | 5    | Y                  | 5    |
| Stephen C.          | Y                          | 3  | Y                            | 5    | N                     | -1  | Y                       | 3    | Y                            | 0    | Y                  | 3    |
| Eoin M.             | Y                          | 3  | Y                            | 1    | Y                     | 3   | Y                       | 3    | Y                            | 3    | Y                  | 3    |
| Sean H.             | N                          | -1 | Y                            | 1    | Y                     | 3   | Y                       | 1    | N                            | -5   | Y                  | 1    |
| Paul M.             | N                          | 0  | N                            | 0    | Y                     | 1   | Y                       | 1    | N                            | 0    | Y                  | 1    |
| Andrew C.           | Y/N                        | 0  | Y                            | 3    | Y                     | 1   | Y/N                     | 1    | Okay                         | 0    | Y                  | 1    |
| Cathal G.           | N                          | 0  | Y                            | 3    | N                     | 0   | Y                       | 3    | N                            | -1   | Y                  | 1    |
| Derek O.            | Y                          | 3  | Y                            | 3    | N                     | -3  | Y                       | 3    | N                            | -1   | Y                  | 3    |
| Micheal M.          | N                          | 0  | N                            | 0    | N                     | 0   | Y                       | 1    | N                            | -5   | Y                  | 1    |
| Philip N.           | Y                          | 1  | Y                            | 3    | N                     | 0   | Y                       | 1    | Y                            | 3    | Y                  | 3    |
| Garrett M.          | Y                          | 3  | Y                            | 1    | Y                     | 1   | N                       | 0    | N                            | -1   | Y                  | 0    |
| Niall C.            | N                          | 0  | N                            | 1    | N                     | 0   | N                       | 1    | N                            | 0    | Y                  | 1    |
| Rory G.             | Y                          | 1  | N                            | -3   | Y                     | 1   | Y/N                     | 0    | N                            | -5   | N                  | -3   |
| John H.             | N                          | 0  | Y                            | 0    | N                     | -3  | N                       | -1   | Y                            | 1    | Y                  | 0    |
| Mark O.             | Y                          | 1  | Y                            | 1    | Y                     | 1   | Y                       | 1    | Y                            | 0    | Y                  | 1    |
| Mean Values         | Learn Gen.                 | 1  | Learn Part.                  | 1.86 | Home Gen.             | .29 | Home Part.              | 1.76 | Teach Gen.                   | -.43 | Teach Part.        | 1.57 |
| Satisfaction Totals | 10N<br>10Y<br>1 Y/N        |    | 5N<br>16Y                    |      | 11N<br>10Y            |     | 4N<br>15Y<br>2Y/N       |      | 11N<br>8Y<br>1 n.s.<br>1o.k. |      | 2N<br>19Y          |      |

The rating scale (which I designed myself - I acknowledge there could have been more negotiation on this matter) was:

| Rating      | -5                | -3                     | -1                   | 0    | 1                 | 3                   | 5              |
|-------------|-------------------|------------------------|----------------------|------|-------------------|---------------------|----------------|
| Description | disimproved a lot | disimproved a good bit | disimproved slightly | same | improved slightly | improved a good bit | improved a lot |

## Appendices

### Full Details for Table S1.16 Student Responses to Final Questionnaire, FQ (A - H)

The rating scale used is shown immediately after table S1.17 below where the individual ratings given by the students for the eight teaching/learning communicative activities are recorded and relate that *from the perspective of a majority of the students for each of seven teaching/learning communicative activities, my practice improved between March 8th and May 17th, 1994*. The mean ratings indicate that the improvements were more than slight improvements. I acknowledge that for some of the students for some of the areas there was no improvement, and even a disimprovement on occasion.

**Table S1.17. Students' responses to the final questionnaire, FQ  
(the eight teaching / learning communicative activities).**

| Name               | CH          | SS          | IQ       | WH          | UB         | GS          | EC          | CU          |
|--------------------|-------------|-------------|----------|-------------|------------|-------------|-------------|-------------|
| Paul H             | 1           | 0           | 3        | 0           | -1         | 1           | 3           | 3           |
| Columba B          | 5           | 5           | 5        | 5           | 1          | 5           | 5           | 5           |
| Darren H           | 5           | 3           | 3        | 5           | 1          | 3           | 3           | 3           |
| John D             | 3           | 3           | 3        | 3           | 3          | 1           | 1           | 3           |
| Ronan M            | 1           | 1           | 1        | 3           | -3         | 1           | 3           | 1           |
| Kelvin K           | -1          | 1           | 3        | 5           | -1         | 1           | 0           | 1           |
| Patrick D          | 3           | 5           | 5        | 3           | 0          | 3           | 5           | 5           |
| Stephen C          | 3           | 3           | 1        | 3           | 0          | 3           | 5           | 3           |
| Eoin M             | 3           | 5           | 1        | 5           | 0          | 0           | 1           | 3           |
| Sean H             | 3           | 3           | 0        | 5           | 0          | 1           | 3           | 1           |
| Paul M             | -1          | 1           | 1        | 3           | -1         | 0           | 3           | 3           |
| Andrew C           | 0           | 1           | 1        | 1           | -1         | 1           | 1           | 0           |
| Cathal G           | 1           | 3           | 3        | 5           | 1          | 1           | 1           | 1           |
| Derek O            | 3           | 3           | 3        | 3           | 3          | 1           | 1           | 1           |
| Micheal M          | 3           | 1           | 1        | 3           | 1          | 1           | 1           | -1          |
| Philip N           | 5           | 3           | 3        | 5           | 3          | 3           | 3           | 3           |
| Garrett M          | 3           | 1           | 3        | 5           | -3         | -1          | -1          | 1           |
| Niall C            | 5           | 3           | 3        | 5           | 1          | 0           | 0           | 1           |
| Rory G             | 3           | 3           | 1        | 5           | 0          | 0           | 0           | 0           |
| John H             | 0           | 5           | -3       | 0           | -1         | 1           | 0           | -3          |
| Mark O             | 1           | 1           | 1        | 1           | 0          | 1           | 1           | 1           |
| <b>Mean Values</b> | <b>2.33</b> | <b>2.57</b> | <b>2</b> | <b>3.48</b> | <b>.14</b> | <b>1.29</b> | <b>1.86</b> | <b>1.67</b> |

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The following rating scale was used:

| Ratings            | -5                | -3                     | -1                   | 0    | 1                 | 3                   | 5              |
|--------------------|-------------------|------------------------|----------------------|------|-------------------|---------------------|----------------|
| Verbal Description | disimproved a lot | disimproved a good bit | disimproved slightly | same | improved slightly | improved a good bit | improved a lot |

[Regarding my usage of Wilcoxon's T statistic, it is important to realize that the ratings awarded by the students were for their perceptions of disimprovement/improvement and were therefore used as the '*differences*' in evaluating Wilcoxon's T statistic (Clegg, 1990: pp. 158-162); here, I believe it is axiomatic that my original position of 'no change' immediately before March 8th had the rating of 0 ('same' = 'no change'). Further, one of my main reasons for using the above rating scale was that, in authentic emergent-design fashion (Lincoln and Guba, 1985: pp. 208-211), I decided to use statistics about eight weeks *after* the creation of the teaching/learning communicative activities!]

## Appendices

### Students' Self Ratings for Improved Learning in the Classroom and at Home for Chemistry [Singularity Study One (1994)]

#### *The Students' Learning*

#### *Test Results*

These have already been mentioned on pages 26 and 27 [Singularity Study One (1994)] and point to improved learning in chemistry for possibly as many as sixteen students.

#### *Students' Ratings for Improved Learning*

The mean ratings for the improvement in the students' learning in the classroom (general and chemistry) and at home (general and chemistry) are displayed in table S1.19.

**Table S1.19. Students' (whole class of 21 students) mean ratings for learning.**

| Context (all students) | Learning Classroom General | Learning Classroom Chemistry | Learning Home General | Learning Home Chemistry |
|------------------------|----------------------------|------------------------------|-----------------------|-------------------------|
| Mean Rating            | 1                          | 1.86                         | .29                   | 1.76                    |
| Wilcoxon's T Statistic | 15                         | 10                           | 54.5                  | 12                      |
| N                      | 21                         | 17                           | 16                    | 19                      |
| Level of Significance  | .01                        | .01                          | None                  | .01                     |

[see Appendices (pages 314 and 316) for questions 1-6 of the final questionnaire, FQ, and the student responses]

#### **The following are examples of my method of interpretation:**

- The mean student rating of 1.86 is statistically significant at a .01 level. This means that I can begin to look at 1.86 as an indicator of improvement - no more and equally no less - that the majority of the students' learning *in their views* improved: this turned out to be 16 students out of 21 students [see Appendices (page 316)].
- However, on testing the mean rating 1 for improved learning in the classroom (general) it was found that ten students out of twenty-one students believed that their learning in all of the other classes (apart from chemistry) had improved, an important improvement - but not a majority.

## Appendices

The mean ratings for the special group of thirteen students were as follows:

**Table S1.20. Students' (special group of thirteen) mean ratings for learning.**

| Context<br>(thirteen<br>students) | Learning<br>Classroom<br>General | Learning<br>Classroom<br>Chemistry | Learning<br>Home General | Learning<br>Home<br>Chemistry |
|-----------------------------------|----------------------------------|------------------------------------|--------------------------|-------------------------------|
| Mean Rating                       | .846                             | 1.076                              | .38                      | 1.15                          |
| Wilcoxon's T<br>Statistic         | 2.5                              | 8                                  | 13                       | 4.5                           |
| N                                 | 7                                | 10                                 | 9                        | 11                            |
| Level of<br>Significance          | .1 ( $\Rightarrow$ None)         | .05                                | None                     | .01                           |

Analyses of tables S1.19 and S1.20 along with analyses of the students' responses to Q.1 - Q.6 of the final questionnaire [see Appendices (pages 314 and 316)] led to the following positive *provisionally true propositions*:

- Most of the students' learning in the classroom (chemistry) improved.  
[sixteen students out of twenty-one students]
- Most of the students' learning at home (chemistry) improved.  
[seventeen students out of twenty-one students]
- Most of the thirteen students improved their learning in the classroom (chemistry).  
[nine students out of thirteen students]
- Most of the thirteen students improved their learning at home (chemistry).  
[ten students out of thirteen students]

It is important to point out, once again, that these improvements are from the students' satisfaction ratings with their own learning.

During the research I used 'classroom (general)' and 'home (general)' as a 'baseline' against which to measure change. What statistics provided was evidence that the students improved significantly more (*from their perspectives*) in their quality of learning in the classroom (chemistry) and in the home (chemistry) than in their quality of learning in the classroom (general) and in the home (general).

This did not mean that I was a better teacher than other teachers in St. John's College. However, I propose that my improved teaching practice [Singularity Study One (1994): pp. 31-33] helped bring about significant improvement in the students' learning in chemistry.



## Appendices

### Details of Sixth Form Students' Results in November 1993 and May 1994 [Singularity Study One (1994)]

On May 17th I gave a chemistry test [Appendices of Singularity Study One (1994)] to the sixth form students and their results of this test along with other results are included in Table S1.7. The test was based on material we had done during the previous two months. It was a similar type of test to that given in November but not as extensive as the trial learning certificate examination in mid-February. I have included the results from the November test and the February test (along with the physics marks from Ollie Horgan who taught the physics section of the course).

I deliberately gave this test the day after the final questionnaire in which the students were asked to estimate the quality of their own learning. I believe it is good for students to have some immediate feedback on their efforts and performances against which to measure their perceptions of their own learning. On a point of interest regarding my perspective towards examination results, I concur with Humphreys (1993: p. 114 and p.120) who recommends that teachers and lecturers think about 'put(ing) the emphasis on responding to academic effort rather than academic performance'.

**Table S1.7. Results for sixth form students' tests.**

| Name of Student           | November Result Chemistry | February Result Chemistry | February Result Physics | May Result Chemistry |
|---------------------------|---------------------------|---------------------------|-------------------------|----------------------|
| Paul H                    | 63                        | 57                        | (52)                    | 67                   |
| Columba B                 | 83                        | 67                        | (66)                    | 85                   |
| Darren H                  | 68                        | 59                        | (44)                    | 73                   |
| John D                    | 78                        | 92                        | (79)                    | 73                   |
| Ronan M                   | 40                        | 49                        | (68)                    | 77                   |
| Kelvin K                  | 48                        | 53                        | (63)                    | 78                   |
| Patrick D                 | 43                        | 40                        | (53)                    | 73                   |
| Stephen C                 | 68                        | 45                        | (50)                    | 71                   |
| Eoin M                    | 15                        | 24                        | (23)                    | 52                   |
| Sean H                    | 33                        | 22                        | (18)                    | 65                   |
| Paul M                    | 83                        | 36                        | (44)                    | 86                   |
| Andrew C                  | 23                        | 33                        | (52)                    | 83                   |
| Cathal G                  | 48                        | 33                        | (33)                    | 87                   |
| Derek O                   | 26                        | 26                        | (23)                    | 68                   |
| Micheal M                 | 25                        | 17                        | (47)                    | 28                   |
| Philip N                  | 22                        | 15                        | (32)                    | 51                   |
| Garrett M                 | 30                        | 18                        | (34)                    | 56                   |
| Niall C                   | 30                        | 17                        | (37)                    | 57                   |
| Rory G                    | 43                        | 31                        | (33)                    | 49                   |
| John H                    | 29                        | 25                        | (37)                    | 43                   |
| Mark O                    | 9                         | 10                        | (19)                    | 25                   |
| <b>Mean Values</b>        | <b>41.7</b>               | <b>36.6</b>               | <b>(43.2)</b>           | <b>64.1</b>          |
| <b>Standard Deviation</b> | <b>22.1</b>               | <b>-----</b>              | <b>-----</b>            | <b>17.5</b>          |

## Appendices

### Results of November 1993 and May 1994 Chemistry Tests [Singularity Study One (1994)]

The most meaningful comparison, it seems to me, is between the November test and the May test. Both tests were of comparable difficulty and had the same format - a short test on recent material (see the appendices for the May test). The May test was the only test based solely on material I did with the students since trying to improve my practice and in this test all twenty-one students improved their mark (see table S1.7, page 18), apart from John D (whose mark went from 78 to 73). Overall, I believe there was a sizeable improvement in the students' results as confirmed by the following two tables:

**Table S1.9. Results of tests for November and May.**

| Month of Test | Number of students who obtained an honour | Number of students who obtained a pass | Number of students who failed |
|---------------|---|--|-------------------------------|
| November Test | 6 students                                | 5 students                             | 10 students                   |
| May Test      | 15 students                               | 4 students                             | 2 students                    |

**Table S1.10. Means and Standard Deviations for November and May results.**

| Statistic          | November Test | May Test |
|--------------------|---------------|----------|
| Mean               | 41.7          | 64.1     |
| Standard Deviation | 22.1          | 17.5     |

The *means* (measures of central tendency) let me know that the average mark in the May test was higher than in the November test and the *standard deviations* (measures of dispersion) let me know that the marks in the second test were more closely bunched together than in the first test. These two statistics indicate that the students' learning improved between March 1994 and May 1994.

I acknowledge that another test in mid-April (the duration of the project was March to May inclusive) could have imported greater validity regarding the degree of improvement in the students' learning.

## Appendices

### *An Area of Weakness in My First Study of a Singularity*

One area of weakness in the 1994 singularity study in relation to the students' learning is that I didn't obtain more dialogic information from the students regarding their own learning and my teaching (for example, information gleaned from audiotaped conversations and videotaped teaching sessions). [A possible lost opportunity] *However, it is important to state that I was learning how to conduct classroom research and an action reflection cycle for the first time and was simultaneously attempting to discover what meanings could be integrated from statistics into the interpersonal educative relationship between my sixth form students and me in connection with the collaboratively elicited teaching/learning communicative activities* [see page 22 of Singularity Study One (1994)].

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|  |
|--|
| <b>February 1994 and June 1994 Chemistry Test Results</b><br><b>[Singularity Study One (1994)]</b> |
|--|

| Name of Student | Trial Leaving Certificate Result in Chemistry (February 1994) | Leaving Certificate Result in Physics and Chemistry Combined (June 1994) |
|-----------------|---|--|
| Paul H          | 57 (H)  | B3 (H) - Repeating   |
| Columba B       | 67 (H)  | B1 (H)   |
| Darren H        | 59 (H)  | B3 (H) - Repeating   |
| John D          | 92 (H)  | B1 (H) - Repeating   |
| Ronan M         | 49 (P)  | A2 (H)   |
| Kelvin K        | 53 (P)  | B2 (H)   |
| Patrick D       | 40 (P)  | C1 (H)   |
| Stephen C       | 45 (P)  | B2 (H)   |
| Eoin M          | 24 (F)  | E (F)  |
| Sean H          | 22 (F)  | E (F)  |
| Paul M          | 36 (F)  | B2 (H)   |
| Andrew C        | 33 (F)  | B2 (H)   |
| Cathal G        | 33 (F)  | D3 (P)   |
| Derek O         | 26 (F)  | E (F)  |
| Micheal M       | 17 (F)  | E (F)  |
| Philip N        | 15 (F)  | E (F)  |
| Garrett M       | 18 (F)  | B3 (P) - Ord. Level  |
| Niall C         | 17 (F)  | B2 (P) - Ord. Level  |
| Rory G          | 31 (F)  | D2 (P)   |
| John H          | 25 (F)  | E (F)  |
| Mark O          | 10 (F)  | D3 (P) - Ord. Level  |

[A1 (90-100%), A2 (85-89%), B1 (80-84%), B2 (75-79%), B3 (70-74%), C1 (65-69%), C2 (60-64%), C3 (55-59%), D1 (50-54%), D2 (40-49%), E (25-39%), F (10-24%)]

The above table displays the Leaving Certificate results for physics and chemistry combined alongside the chemistry results for February. It can be seen that in the Leaving Certificate Examination in June, ten students obtained an honour, six students failed and the remaining five passed physics and chemistry combined. This is worth comparing with the prediction stated on page 79 and again on page 93 of the first report of '*A Venture into Classroom Research*' [where I predicted on June 18th that ten students would obtain an honour, five or four students would fail, and six or seven students would pass]. The above results came out in mid-August 1994.

It is also interesting to note that the group (each group contained three students) which had the most overt off-task behaviours both in the classroom groupwork observation and in the practical observation (the same group) was the only group from which two students failed the June test in physics and chemistry combined.

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**Evidence For My Concern And Eliciting Imagined Solutions  
[Singularity Study Two (1995)]**

**Evidence For My Concern**

On Wednesday, January 11th, 1995, I drew up a questionnaire for the leaving certificate mathematics group of students which focused on their lack of question asking in the classroom. Ronan [one of the sixth form students - see Addendum (page 329)], partly taking on the role of a 'fellow enquirer', met me after 4.00 p.m. on the same day and helped me to modify the questionnaire, suggesting I add the category 'fairly often' and offering some of the comments bracketed in the third question below:

**QUESTIONNAIRE (L.C. MATHS) - THURSDAY 12-01-1995**

Q.1 How often do you ask questions in the mathematics class (please tick)?:

|           |     |         |     |              |     |
|-----------|-----|---------|-----|--------------|-----|
| always    | ( ) | usually | ( ) | fairly often | ( ) |
| sometimes | ( ) | seldom  | ( ) | never        | ( ) |

Q.2 How often does the teacher invite questions in the mathematics class (please tick)?:

|           |     |         |     |              |     |
|-----------|-----|---------|-----|--------------|-----|
| always    | ( ) | usually | ( ) | fairly often | ( ) |
| sometimes | ( ) | seldom  | ( ) | never        | ( ) |

Q.3 What are your reasons for not asking more questions in the mathematics class? (e.g. afraid of the reactions from other students, not listening, afraid of making a mistake, afraid of engaging with the teacher in case a follow-up question is asked, etc.):

- i
- ii
- iii
- iv
- v
- vi

Name: \_\_\_\_\_ Date: \_\_\_\_\_

The students' responses to the first two questions are summarised in the following table (23 students = total number):

**Table S2.1. Student responses to Q.1 & Q.2 of the first questionnaire (12-01-1995).**

| <b>Frequency</b>    | <b>How often do you ask questions in the mathematics class?</b> | <b>How often does the teacher invite questions in the mathematics class?</b> |
|---------------------|---|--|
| <b>Always</b>       | no student  | 4 students   |
| <b>Usually</b>      | 1 student   | 11 students  |
| <b>Fairly Often</b> | no student  | 3 students   |
| <b>Sometimes</b>    | 5 students  | 4 students   |
| <b>Seldom</b>       | 14 students   | 1 student  |
| <b>Never</b>        | 3 students  | no student   |

It seems I was inviting the students to ask questions quite a lot while they were reluctant to ask questions (when invited and when not invited). This explicit evidence seemed to indicate a certain lack of student involvement in learning mathematics. Consequently, I felt justified in my concern regarding questioning and I was therefore committed to teasing out imagined solutions with these mathematics students and Joe English, a teaching colleague, who had agreed to act as my fellow enquirer for this project [Joe worked with me last year as a critical friend in 'A Venture Into Classroom Research' (1994 study) and is also a keen mathematics teacher].

### Eliciting Imagined Solutions

The session on Thursday, January 12th, was structured as follows:

Firstly, the students had ten minutes to fill in their questionnaires individually (2.45 -2.55). They then broke up into six groups (5x4 students and 1x3 students) and from 3.00 until 3.10 they discussed Q.3 of the questionnaire: *'What are your reasons for not asking more questions in the mathematics class?'*

I collected the individual written responses before they had their group discussions, the former therefore functioning as an 'ideas formulation' experience for the latter. Also, I asked each group to appoint a spokesperson who wrote down the significant comments of their group discussion. Finally, I asked each spokesperson to read out the comments from his group. This yielded some interesting information which was good to have out in the open.

The following represents one overt sample from each group:

- Group 1—————*'Afraid of making mistakes'*
- Group 2—————*'Afraid of follow-up questions'*
- Group 3—————*'Thinking everyone else knows'*
- Group 4—————*'Afraid of looking stupid in front of the teacher'*
- Group 5—————*'Worried about the teacher's reactions'*
- Group 6—————*'Don't ask questions in any other classes either'*

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We then had an open discussion (Ben Cunningham, mentioning Kevin Mc Dermott, had nudged me in this direction) which yielded positive dividends, the session finishing at 3.25 p.m.

I felt quite vulnerable and was indeed experiencing risk-taking when invited during the open discussion in front of the whole class to change in the following two areas:

- stating my train of thought more clearly ——— Kieran McG.(Group 3)
- timing of my talking when writing on the blackboard ———  
Barry O'D. (Group 1) and confirmed by William McA. (Group 2)

However, my wave of fear quickly passed and I could accept these as challenges to change my teaching practice.

I feel it was good for the whole class to air their fears and I believe group feedback brought reasons for their reluctance to ask questions out into the open more readily while simultaneously protecting individuals from too much exposure.

I analysed all the individual and group comments seeking out areas where I could improve my practice.

This is consistent with my approach in 'A Venture Into Classroom Research' (1994) and also with learner-initiated enquiry which may take the form of suggesting lines which the teacher might follow in order to enhance the learning experience (Laidlaw, 1993).

To come more speedily to the six key areas, I will state each area and mention the source or sources of each invitation to change my teaching practice.

Linking to the previous day's work (LI): This came from Ronan Margey through the interactive journalling and was later confirmed by Joe English (a teaching colleague) who had been practising some of the skills I researched last year.

Joe had a list of last year's skills taped to his table (needless to say I welled somewhat with pride!) and had also added 'summary' as a skill worth cultivating. He also felt that giving a summary at the start of the next day's work would be useful (linking).

Explaining clearly - stating my train of thought (ECSTOT): Kieran McG. (Group 3) issued this invitation as already described in the open discussion after processing the groupwork.

Explaining clearly - timing of talking when writing (ECTW): This was prompted by Barry O'D. (Group 1) and confirmed by William McA. (Group 2) as previously mentioned.



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Going slowly (GS) : Barry O'D. (Group 2) wrote, *'going too fast when writing and explaining stuff on the board'*, and James B. (Group 6) wrote, *'too busy trying to keep up'*, in their individual questionnaires.

Inviting questions (IQ): I was already doing this as confirmed by the evidence in table 2.1 (page 327) and felt sustaining at least the same level was very much required to encourage overt questioning by the students. Additionally, Ronan issued the following invitation in his journal (December 1994) before the construction of the first questionnaire (page 326): *'Many people are often reluctant to ask questions. Therefore, encouragement should be given to question or query any item as it is being covered.'*

Summarising at the end of a lesson (SU): As stated above, this came from Joe English, my fellow enquirer, who had also mentioned 'summary' last year.

On the day after the students responded to the questionnaire, Ronan and I met for a taped conversation at four o' clock (on a Friday!) to review how the exercise went. The following is a continuous extract:

Ronan: *'----- I thought it would be treated as a bit of a joke by most but there were only a few who thought it was funny and when they got down into the groupwork they contributed as much as others who took it seriously.'*

James: *'Well -- now I felt even from reading all the individual sheets that there was nobody trying to be smart on the sheets ----- I was very impressed by that now ----- first of all how open they were to it and also the depth of some of the reflections ----- you know.'*

Ronan: *'yeah -- they came up with some good suggestions -- I thought they might be afraid to speak out -- you know because the teacher was there as they were doing the groupwork -- but they all came out with their own suggestions and their own opinions on it.'*

Overall, the two of us felt the session with the class went well. This was further confirmed by comments from some of the students from the class who watched two videos of my teaching in early February and late March.

## Addendum

I believe it is worth noting that the focus on sixth form students' lack of question asking in higher level leaving certificate mathematics in the classroom [see page 326] emerged as a joint concern between Ronan (a sixth form student and critical friend) and me through the process of interactive journalizing. Ronan is now - March 1999 - in his fourth year of medical studies in Dublin.

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Evaluation Questionnaire: 1995 Singularity Study

LC MATHS QUESTIONNAIRE (THURSDAY 30-03-1995)

SINCE THE DAY WE DISCUSSED QUESTIONING (THURSDAY 12-01-1995)

PLEASE RATE THE CHANGE(IF ANY) IN MY TEACHING PRACTICE IN THE FOLLOWING SIX AREAS USING THE SCALE DESCRIBED BELOW:

SCALE

|                        |    |
|------------------------|----|
| DISIMPROVED A LOT      | -5 |
| DISIMPROVED A FAIR BIT | -3 |
| DISIMPROVED SLIGHTLY   | -1 |
| NO CHANGE              | 0  |
| IMPROVED SLIGHTLY      | 1  |
| IMPROVED A FAIR BIT    | 3  |
| IMPROVED A LOT         | 5  |

YOU CAN USE ANY NUMBER BETWEEN -5 AND 5 INCLUSIVE (NO MORE THAN TWO DECIMAL PLACES PLEASE):

LINK TO PREVIOUS DAY'S WORK -----  
EXPLAINING CLEARLY (STOT)-----  
EXPLAINING CLEARLY (TW) -----  
GOING SLOWLY -----  
INVITING QUESTIONS-----  
SUMMARY AT END OF LESSON-----

AND WHAT ABOUT YOUR PARTICIPATION?

PLEASE RATE THE CHANGE IN YOUR LEARNING(HELPED BY MY CHANGING PRACTICE) IN THE FOLLOWING AREAS:

UNDERSTANDING OF MATHS -----  
ASKING QUESTIONS (WHEN INVITED) -----  
ASKING QUESTIONS (VOLUNTARILY)-----

NAME:

DATE:

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### Sixth Form Students' Responses for the Six Key Teaching Areas: [Singularity Study Two (1995)]

**Table S2.3. Students' responses for the six key teaching areas.**

| <b>Name Of Student</b> | <b>LI</b>   | <b>ECSTOT</b> | <b>ECTW</b> | <b>GS</b>   | <b>IQ</b>   | <b>SU</b>   |
|------------------------|-------------|---------------|-------------|-------------|-------------|-------------|
| <b>Seamus B.</b>       | 1           | 1             | 3           | 1           | 1           | 3           |
| <b>James B.</b>        | 2.5         | 2             | 2           | 3           | 3           | 1           |
| <b>Adrian C.</b>       | 4           | 2             | 2.5         | 0           | 3           | 2           |
| <b>Shane F.</b>        | 3           | 3             | 3           | 3           | 5           | 3           |
| <b>Eoin G.</b>         | 1           | 2             | 2.5         | 3           | 0           | 2           |
| <b>Donnan H.</b>       | 2           | 1.5           | 3           | 0           | 3.5         | 0.5         |
| <b>Ruaidrí H.</b>      | 2           | 2             | 1           | 3           | 2           | 2           |
| <b>Manus K.</b>        | 2.5         | 1.3           | 0.5         | 1.8         | 1.5         | 1           |
| <b>Kenneth K.</b>      | 1           | 3             | 1           | 0           | 3           | 0           |
| <b>William M.</b>      | 5           | -1            | 1           | 3           | 3           | 5           |
| <b>James M.</b>        | 3           | 1             | 2           | 2           | 5           | 1           |
| <b>Adrian M.</b>       | 3           | 3             | 1.5         | 2.2         | 1.8         | 1           |
| <b>Kieran M.</b>       | 2           | 4             | 3           | 3           | 1           | 3           |
| <b>Dermot M.</b>       | 3           | 1             | 1           | 2           | 2           | 1           |
| <b>Thomas M.</b>       | 3           | 1             | 1           | 1           | 5           | 1           |
| <b>Damien Mg.</b>      | 1.57        | 0.52          | -1.01       | -3.4        | 3.2         | 1.2         |
| <b>Ronan M.</b>        | 3           | 5             | 5           | 1           | 3           | 1           |
| <b>Damien Mn.</b>      | 3           | 0             | 1           | 1           | 3           | 1           |
| <b>Garvan M.</b>       | 0           | 0             | 0           | 1           | 1           | 1           |
| <b>Barry O.</b>        | 0           | 1             | 1           | 0           | 3           | 0           |
| <b>Finbar O.</b>       | 1           | 2             | 0           | -1          | 3           | 1           |
| <b>Eoghan R.</b>       | 4.6         | 3.2           | 3.4         | 1.4         | 3           | 4.8         |
| <b>Shane S.</b>        | 0           | 1             | 1           | 1           | 3           | 0           |
| <b>MEAN VALUE</b>      | <b>2.22</b> | <b>1.72</b>   | <b>1.67</b> | <b>1.26</b> | <b>2.70</b> | <b>1.59</b> |

**Sixth Form Students' Understanding of Mathematics: 1995 Singularity Study**

**Table S2.4. Sixth form students' understanding of mathematics.**

| <b>Name of Student</b> | <b>Understanding of Mathematics</b> |
|------------------------|-------------------------------------|
| <b>Seamus B.</b>       | 0                                   |
| <b>James B.</b>        | 1                                   |
| <b>Adrian C.</b>       | 4                                   |
| <b>Shane F.</b>        | 3                                   |
| <b>Eoin G.</b>         | 3.5                                 |
| <b>Donnan H.</b>       | 2.1                                 |
| <b>Ruaidrí H.</b>      | 3                                   |
| <b>Manus K.</b>        | 0.15                                |
| <b>Kenneth K.</b>      | 3                                   |
| <b>William M.</b>      | 3                                   |
| <b>James M.</b>        | 1                                   |
| <b>Adrian M.</b>       | 3                                   |
| <b>Kieran M.</b>       | 3                                   |
| <b>Dermot M.</b>       | 2                                   |
| <b>Thomas M.</b>       | 1                                   |
| <b>Damien Mg.</b>      | 1.99                                |
| <b>Ronan M</b>         | 3                                   |
| <b>Damien Mn.</b>      | 1                                   |
| <b>Garvan M.</b>       | 0                                   |
| <b>Barry O.</b>        | 1                                   |
| <b>Finbar O.</b>       | 1                                   |
| <b>Eoghan R.</b>       | 3.1                                 |
| <b>Shane R.</b>        | 1                                   |
| <b>MEAN VALUE</b>      | <b>1.95</b>                         |

Tables S2.3 and S2.4 generate two further tables [table S2.5 and table S2.6], where, similar to my approach to statistics in *'A Venture into Classroom Research'*, I use Wilcoxon's T statistics to test the mean values in tables S2.3 and S2.4 for statistical significance.

[Again, consistent with the first singularity study, only when there is statistical significance do I claim that the particular mean value is an indicator of improved/disimproved teaching or learning for most of the students in the class, as perceived by the students' themselves. This is developed further in the evaluation section.]

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### Sixth Form Students' February and June Results (1995): 1995 Singularity Study

**Table S2.11. The Sixth Form Students' February and June results (1995).**

| <b>Name Of Student</b> | <b>Mathematics Result February 1995<br/>(Trial Leaving Certificate)</b> | <b>Mathematics Result June 1995<br/>(Leaving Certificate)</b> |
|------------------------|---|---|
| <b>Seamas B.</b>       | B2  | B1  |
| <b>James B.</b>        | B3  | A2  |
| <b>Adrian C.</b>       | D2  | C1  |
| <b>Shane F.</b>        | D3  | D2  |
| <b>Eoin G.</b>         | F   | C2  |
| <b>Donnan H.</b>       | E   | C3  |
| <b>Ruaidri H.</b>      | F   | D2  |
| <b>Manus K.</b>        | D3  | B3  |
| <b>Kenneth K.</b>      | D1  | B2  |
| <b>William M.</b>      | F   | E   |
| <b>James M.</b>        | D3  | D1  |
| <b>Adrian M.</b>       | E   | C1  |
| <b>Kieran M.</b>       | F   | C3  |
| <b>Dermot M.</b>       | F   | D2  |
| <b>Thomas M.</b>       | F   | D1  |
| <b>Damien Mg.</b>      | E   | D2  |
| <b>Ronan M.</b>        | C1  | A2  |
| <b>Damien Mn.</b>      | D3  | B3  |
| <b>Garvan M.</b>       | F   | C2  |
| <b>Barry O.</b>        | E   | C2  |
| <b>Finbar O.</b>       | D3  | C3  |
| <b>Eoghan R.</b>       | D1  | B2  |
| <b>Shane S.</b>        | E   | C3  |

Every student improved his grade between February and June [Honour = A, B, C; Pass = D; Fail = E, F]. In my view, the overall improvement for the whole class was terrific as confirmed by table S2.12 [page 110 of thesis].

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### Contents for Singularity Study Three (1996)

|   | <u>Page</u> |
|---|-------------|
| Addressing My Research Question   | 1           |
| The Problem/Concern   | 2           |
| Why was I concerned?  | 3           |
| Imagined Solutions  | 4           |
| Implementing Imagined Solutions and Gather Further 'Evidence'                 | 8           |
| Evaluating Our Actions (Further Analysis of Action Research Information)      | 16          |
| Some Concerns to Date   | 16          |
| Themes  | 28          |
| (a) The Students' Learning  | 28          |
| (b) Some Student Value-Reasons for their Improved Learning                    | 34          |
| (c) Other Values within My Educative Relationships                            | 41          |
| (d) Empathic Statistics   | 51          |
| (e) Completing the Evaluation of the 1996 Singularity Study                   | 55          |
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### Initiating Questionnaire for Sixth Form Chemistry Students (23-11-1995) [Singularity Study Three (1996)]

On Thursday, November 23rd, 1995 I gave a questionnaire to the sixth form chemistry students (Friday, to Ethan) with the following structure:

---

#### What Can I Do?

---

Q.1 What can I do to improve my teaching (and hopefully help you to improve your learning) in chemistry?

Q.2 In what ways can I help you to improve your homework practice in chemistry?

---

#### What Can You Do?

---

Q.3 What can you do to help you improve your learning in chemistry in the classroom/laboratory?

classroom:

laboratory:

Q.4 What can you do to help you improve your homework practice in chemistry?

**Journal Entry (25-11-1995):** *All of the questions are open and I have asked the students to challenge themselves after showing that I am willing to be challenged.* [Data Archive]

**Member-Check Questionnaire: Sixth Form Students (29-11-1995)  
[Singularity Study Three (1996)]**

Sixth Form Chemistry Students --- All of the students were in today [28-11-1995 (the day prior to responding to all of the contents on this page)] and we had a very productive discussion. I had read all of their responses to the questionnaire [Appendices (page 335)] (EF's tomorrow but EF present). In the group discussion I went through each of their responses (to Q.1 and Q.2, in particular) and looked for further clarification where I was unsure of the specific meaning of what the students had written. My fundamental question was, 'What can I do to help you to improve your learning?'. I believe we reached a consensus/majority on each of the following nine communicative activities which I would try to live out more fully:

**IQ** ----- Inviting the students to ask Questions.

**ECDPT** ----- Explaining Clearly regarding Details, Practical applications, and Talk before practical.

**ECTW** ----- Explaining Clearly regarding timing of Talking when Writing on the board.

**GSM** ----- Going Slowly when doing the more difficult Mathematical questions.

**GFT** ----- Going Faster with the non-mathematical Theory.

**CSU** ----- Checking Students' Understandings of class/laboratory work and homework.

**CLH** ----- CLarifying the Homework regarding a little direction for more challenging questions.

**CH** ----- Checking each student's Homework and grading it (focusing on learning progress).

**TEST** ----- TEST at the end of each chapter.

Are the above outcomes an accurate reflection (I added CSU later on further reflection seeing it as an invitation from what JK and AHZ wrote and GP said) of what was decided at the meeting on Tuesday 28-11-1995? [All eleven students said 'Yes'.]

If there are any inaccuracies please let me know here: [No student suggested any inaccuracies in my above reflections on the meeting of 28-11-1995.]

What was your impression of the meeting? [N.B. The students' responses to this question are on pp. 87-88 of my thesis.]



**Singularity Study Three (1996): Where did the Nine Teaching/Learning Communicative Activities come from?**

**1. IQ (Inviting the students to ask Questions)**

- *Invite people to ask questions even by picking a person to ask if he has any problems etc. (Afnan HZ).*
- *Inviting questions from students would help us clear up anything we don't understand. (Paul R).*
- *Class discussion.*

**2. ECDPT (Explaining Clearly regarding Details, Practical applications, and Talk before practical)**

- *Explain the topics with a bit more detail. (Gary P).*
- *Class discussion.*

**3. ECTW (Explaining Clearly regarding timing of Talking when Writing on the board)**

- *Don't write and speak at the same time. (Aidan R).*
- *Class discussion.*

**4. GSM (Going Slowly when doing the more difficult Mathematical questions)**

- *Go slower during some of the more difficult topics. (David O ).*
- *Go slower in class. (Aidan R).*
- *Class discussion.*

**5. GFT (Going Faster with the non-mathematical Theory)**

- *Finishing the course faster so that the pressure is reduced. (Afnan HZ).*
- *Class discussion.*

**6. CSU (Checking Students' Understandings of class/laboratory work and homework)**

- *Watch for the response from the pupils. (James K).*
- *Picking a person to ask if he has any problems. (Afnan HZ).*
- *Class discussion.*

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### **7. CLH (CLarifying the Homework regarding a little direction for more challenging questions)**

- *Run us through the homework at the end of class and make sure we understand and know how to do it. (James K).*
- *Class discussion.*

### **8. CH (Checking each student's Homework and grading it - focusing on learning progress )**

- *Asking us the following day if we have any homework problems. (Afnan HZ).*
- *Grade the homework. Check the homework. (Gary P).*
- *Correcting it. (Aidan R).*
- *Class discussion.*

### **9. TEST (TEST at the end of each chapter)**

- *Monthly revision tests. (David M).*
- *Have tests at the end of each chapter. (Gary P).*
- *Give short revision tests at the end of each chapter. (Jarlath T).*
- *Class discussion.*

**Singularity Study Three (1996): Improved Teaching**

**Table S3.3. Percentage ratings for the nine communicative teaching/learning activities.**

| <b>Communicative Teaching/<br/>Learning Activity</b> | <b>Initial Mean Percentage<br/>04-12-1995</b> | <b>Final Mean Percentage<br/>30-01-1996</b> |
|--|---|---|
| <b>IQ</b>  | 55.91   | 50.05                                       |
| <b>ECDPT</b>   | 43.73   | 80.18                                       |
| <b>ECTW</b>  | 46.45   | 56.36                                       |
| <b>GSM</b>   | 45.55   | 75  |
| <b>GFT</b>   | 60.91   | 75.46                                       |
| <b>CSU</b>   | 47.55   | 76.73                                       |
| <b>CLH</b>   | 51.82   | 64.55                                       |
| <b>CH</b>  | 31  | 89.55                                       |
| <b>T</b>   | 27.5  | 75.45                                       |
| <b>Overall Mean For Teaching</b>                     | <b>45.6</b>                                   | <b>71.48</b>                                |

[45.6 and 71.48 are statistically significant; related  $t$  value =  $3.77 > 3.355$ ,  $df = 8$ , significant at a .01 level for a two-tailed test]

Table S3.3 points to improved teaching practice for me over the course of the project *from the perspective of the eleven sixth form chemistry students*. The early December and late January questionnaires requested: *'Please rate your chemistry teacher's practice up to now for each of the following nine communicative activities on a scale 0 — 100 - no more than two decimal places please! - using the same meanings that are applied when your tests are being corrected by teachers in the college.'*

It can be seen that the percentages increased for eight of the nine areas and that the overall mean percentage for my teaching (taking the nine areas into account) changed from 46% to 72%, an increase of 26%. [This difference is statistically significant at a .01 confidence level, using the *related t value* statistic.] For this part of the report I used percentages to see if I could strengthen the credibility of the -5, -3, -1, 0, +1, +3, +5 rating scale and I

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feel it worked, as the mean improved rating for my teaching was 3.03, which means improved 'a fair bit' (1996 study) and I believe this corroborates powerfully with an improved percentage rating of 26%.

### *Monitoring Progress During an Action Research Enquiry*

Table S3.4 indicates that there was an improvement in my teaching practice *from the students' perspectives* between December 12th (two weeks after the project began) and January 18th (two weeks before the enquiry ended). This, I maintain, is encouraging news, especially seeing that there was an improvement for eight of the nine teaching/learning communicative activities (CH had 11 affirmatives each time) *between* December 12th and January 18th and that the affirmatives from the students climbed from 63 affirmatives out of a possible 99 affirmatives to 85 affirmatives out of a possible 99 affirmatives (11 students, 9 activities).

**Table S3.4. Monitoring progress during 1995/1996 enquiry.**

| <b>Communicative Teaching/<br/>Learning Activity</b> | <b>Overall Improvement Since Nov 28th (12-12-1995)</b> | <b>Overall Improvement Since Nov 28th (18-01-1996)</b> |
|--|--|--|
| <b>IQ</b>  | 5 I, 6 S   | 7 YES, 4 NO  |
| <b>ECDPT</b>   | 10 I, 1 S  | 11 YES   |
| <b>ECTW</b>  | 8 I, 1 S, 2 D  | 9 YES, 2 NO  |
| <b>GSM</b>   | 6 I, 5 S   | 11 YES   |
| <b>GFT</b>   | 5 I, 6 S   | 8 YES, 3 NO  |
| <b>CSU</b>   | 8 I, 3 S   | 9 YES, 2 NO  |
| <b>CLH</b>   | 8 I, 3 S   | 9 YES, 2 NO  |
| <b>CH</b>  | 11 I   | 11 YES   |
| <b>T</b>   | 2 I, 7 S, 2 D  | 10 YES, 1 NO   |
| <b>TOTALS</b>  | 63 I, 32 S, 4 D  | 85 YES, 14 NO  |

[I = Improved, S = Same, and D = Disimproved; YES = improved, NO = didn't improve = Same or Disimproved]

Sixth Form Students' Improved Learning:  
Singularity Study Three (1996: pp. 28-31)

(a) The Students' Learning

*Comparing the Full Test Results for the Whole Class*

Table S3.5 shows that ten of the eleven students improved their mark in chemistry between the November 1995 test and the January 1996 test. As the tests were of comparable difficulty, the results act as an indicator that the majority of the students' learning improved between November 23rd and January 18th.

**Table S3.5. Results for sixth form students' tests in November 1995 and January 1996.**

| <b>Student's Name</b>     | <b>Student's November 23rd Test Result Chemistry (1995)</b> | <b>Student's January 18th Test Result Chemistry (1996)</b> |
|---------------------------|---|--|
| <b>Eamonn F</b>           | 40  | 68   |
| <b>Ethan G</b>            | 35  | 41   |
| <b>Afnan HZ</b>           | 74  | 83   |
| <b>James K</b>            | 36  | 53   |
| <b>David M</b>            | 60  | 88   |
| <b>David O</b>            | 50  | 82   |
| <b>Gary P</b>             | 55  | 65   |
| <b>Aidan R</b>            | 45  | 57   |
| <b>Kevin R</b>            | 46  | 68   |
| <b>Paul R</b>             | 60  | 75   |
| <b>Jarlath T</b>          | 58  | 51   |
| <b>Mean Value</b>         | <b>50.82</b>  | <b>66.45</b>   |
| <b>Standard Deviation</b> | <b>11.38</b>  | <b>14.2</b>  |

[The difference between the two means, 50.82 and 66.45, is statistically significant as confirmed by Wilcoxon's T statistic ( $T = 2 < 5$ ,  $N = 11$ ) and the related t value ( $4.53 > 3.169$ ,  $df = 10$ ) for the two sets of scores. The level of significance is .01.]

### *What About Evidence of Improved Learning in a Specific Area of Chemistry?*

Two of the questions from the test in November (Q.3 and Q.4) were on electrolysis and these same two questions were again asked in January, eight weeks later, along with two other questions. *I asked the same two questions again in an attempt to elicit some indication of retention of, and improvement in, learning in a specific area in chemistry (electrolysis) for individual students in the class.* In January we were studying organic chemistry and had moved away from electrolysis when the second test was given. The two electrolysis questions were as follows:

*Questions Three and Four of the November 23rd and January 18th Chemistry Tests*

*Q.3 (a) What is the electrochemical series?*

*(b) List the elements of the electrochemical series.*

*(c) Distinguish between a voltaic cell and an electrolytic cell.*

*(d) When ions of the same charge compete for discharge in electrolysis, what two factors are particularly significant?*

*Q.4 (a) What is electrolysis?*

*(b) Give the anode reaction for the electrolysis of potassium iodide.*

*(c) Give the cathode reaction for the electrolysis of lead bromide.*

*(d) Give the anode and cathode reactions for the electrolysis of aqueous copper sulphate using inert electrodes.*

- Eight of the eleven students improved their marks in Q.3 and Q.4 in January and the results are displayed in table S3.6 along with the eight students' ratings for their own improved learning in electrolysis *nine days before the second test was given*. Again, it is worth noting that the two tests were eight weeks apart. I have a diary of errors and omissions for all eleven students for Q.3 and Q.4 for both tests (Data Archive).

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**Table S3.6. Students' combined results for the two electrolysis questions (Q.3 and Q.4) and their own ratings for improved understanding in electrolysis before the second test.**

| Student's Name     | Student's November 23rd Test Result Electrolysis (1995) | Student's January 9th Rating For Improved Understanding Of Electrolysis | Student's January 18th Test Result Electrolysis (1996) |
|--------------------|---|---|--|
| Eamonn F           | 66  | 1   | 80   |
| Afnan HZ           | 86  | 3?  | 89   |
| James K            | 49  | 1   | 65   |
| David M            | 76  | 1   | 89   |
| David O            | 60  | 3   | 84   |
| Gary P             | 71  | 1   | 88   |
| Kevin R            | 54  | 3?  | 59   |
| Paul R             | 75  | 3?  | 78   |
| Mean Values        | 67  | 2   | 79   |
| Standard Deviation | 9.57  | ---   | 9.07   |

[The difference between the two means, 67 and 79, is statistically significant as confirmed by Wilcoxon's T statistic ( $T = 0 < 2$ ,  $N = 8$ ) and the related t value ( $4.32 > 3.499$ ,  $df = 7$ ) for the two sets of scores. The level of significance is .02 for Wilcoxon's T statistic and .01 for the related t value. The latter is a more powerful statistic (Clegg, 1990: p. 87), and here, gladly, points to a higher level of significance (.01).]

The *question mark* after three of the students' self-ratings for improvement in learning is included because the % increase in the chemistry test results do not warrant the term 'improved a lot' which goes with a rating of 3 on the rating scale.

### *Students' Comments Regarding Improved Understanding of Electrolysis*

#### **Eamonn F**

*Eamonn F I understand the anode and cathode reactions better for electrolysis reactions. For example, in the electrolysis of molten NaCl, I understand why the  $Cl^-$  ions are attracted to the anode and why the  $Na^+$  ions are attracted to the cathode (January 18th, written comment after the second test).*

This was confirmed in an audiotaped conversation with Eamonn on February 2nd:

*Eamonn F I became more sure of like the anode has a positive charge and the cathode has a negative charge. I learned more about that there like.*

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*James F Did I question you on that in class at one stage?*

*Eamonn F I think you did, yeah --- that's how I learned it.*

I remember questioning Eamonn on this during a chemistry lesson. The above segments confirm retention of learning (Eamonn was still getting it right in February) and a little on how my questioning during a chemistry lesson helped Eamonn to distinguish between an anode and a cathode.

I can remember Eamonn getting the answer incorrect in class and me reminding him of the acronym **PANIC** as a possible 'memory trick' --- **P**ositive/**A**node and **N**egative/**C**athode. This may seem simple and it is but it can get confusing sometimes for students when they also learn that an **A**nion is **N**egative and a **C**ation is **P**ositive. This knowledge is certainly not abstract and has very important applications in obtaining some metals from ores and if water is ever to replace petrol as a fuel the electrolysis of acidulated water may become a very important chemical reaction (and the present-day February 1998 pressure from the US on Iraq would in all probability be very much less!).



**Sixth Form Students' Ratings of Their Own Improved Learning:  
1996 Singularity Study**

**Table S3.9. Students' responses to the 'final' questionnaire's four learning areas.**

| <b>Student's Name</b> | <b>Understanding Chemistry</b> | <b>Understanding Electrolysis</b> | <b>Understanding Organic Chemistry</b> | <b>Improved Homework Practice</b> |
|-----------------------|--------------------------------|-----------------------------------|--|-----------------------------------|
| <b>Eamonn F</b>       | 3                              | 5                                 | 1                                      | 3                                 |
| <b>Ethan G</b>        | 1                              | 3                                 | 1                                      | 5                                 |
| <b>Afnan HZ</b>       | 3                              | 1                                 | 3                                      | 1                                 |
| <b>James K</b>        | 5                              | 3                                 | 1                                      | 5                                 |
| <b>David M</b>        | 5                              | 3                                 | 3                                      | 5                                 |
| <b>David O</b>        | 3                              | 3                                 | 3                                      | 3                                 |
| <b>Gary P</b>         | 3                              | 0                                 | 3                                      | 3                                 |
| <b>Aidan R</b>        | 1                              | 1                                 | 5                                      | 3                                 |
| <b>Kevin R</b>        | 3                              | 5                                 | 3                                      | 3                                 |
| <b>Paul R</b>         | 5                              | 3                                 | 3                                      | 5                                 |
| <b>Jarlath T</b>      | 5                              | 3                                 | 5                                      | 5                                 |
| <b>Mean Value</b>     | <b>3.36</b>                    | <b>2.73</b>                       | <b>2.82</b>                            | <b>3.73</b>                       |

There is no need to use the Wilcoxon's T statistic for testing statistical significance for the four means in table S3.9 because all of the ratings are positive, apart from one zero in one column; that is, the means are obviously statistically significant. Again, they are merely **indicators** of positive change.

Clearly, all of the students claimed that their understanding of chemistry and their homework practice improved. Most of the students believed that their learning improved from 'a fair bit' to 'a lot'; table S3.5 on *The Students' Learning* [Appendices (page 341)] shows the students' test results and is consistent with this statement. I realise that examination results are but one indicator of improvement, but an indicator nonetheless. It is also worth stressing that the students had talked about their improved learning during audiotaped conversations and thus there were some specific descriptions along with ratings.

**I believe that my improved teaching practice helped to bring about improved learning for the majority of the students in the sixth form chemistry group because I responded effectively and empathically (over the duration of the enquiry) to their practical suggestions for helping their learning.**

## Appendices

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**Action-Reflection Cycles and Resolutions of Dilemmas**  
**[Singularity Study Four (1997)]**

This year I have come to more fully appreciate that action-reflection cycles don't necessarily occur linearly nor with one following directly after the other and that cycles that occur simultaneously are not necessarily in tandem regarding stages. In this section I will look at **three dilemmas** and take one strand of development through the concern/plan/action/evaluation/modification phases for each of the three dilemmas. My purpose here is to show that, despite the story mode of the earlier sections of the report, systematic action-reflection cycles, which correspond to the ways I work at improving my teaching practice, were enacted throughout the course of the enquiry. And it is also worth relating that in utilising a story mode I deliberately understated the usage of the action-reflection cycle method lest the flow of the story be 'blocked' (an aesthetic matter).

**Dilemma One: Small Group/Whole Group**

**Concern:** Do I utilise empathic statistics?

**Plan and Action:** I gave the students two questionnaires (one initial and one follow-up) in an attempt to initiate the creation of 'categories' or 'teaching/learning communicative activities'.

**Evaluation:** As explained in *'Compromising with Myself - Making a Professional Judgement'* I decided not to use statistics [pp. 68-69 of Singularity Study Four (1997)].

**Modification:** I decided that tests (September 1996 to February 1997) and systematic documentation of every student's errors together with subsequent feedback with the intention of eliminating those errors would constitute the main whole-group involvement in the project.

**Dilemma Two: Small Group/Whole Group**

**Concern:** What three students do I choose and how do I get close to their understandings of mathematics?

**Plan and Action:** I asked Hugh, Chris and Terence to work with me because they got the lowest marks in their summer 1996 mathematics examination and I met with this group twice (October 9th and November 13th, 1996) to discuss their errors in recent tests.

**Evaluation and Modification:** pp. 166-169 of my thesis shows why I changed the grouping to Hugh, Felim, and Paul.

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### Dilemma Three: Hugh/Small Group

**Concern:** How do I get close to Hugh's, Felim's and Paul's understandings of mathematics?

**Plan and Action:** I gave all of the students tests and documented their errors. I gave the three students questionnaires about their 'images' for learning mathematics. I met them a few times and Ann met them once as a group and then Hugh on his own.

**Evaluation:** Ann and I both felt that Paul and Felim were able to cope fine but that Hugh was struggling with higher level mathematics.

**Modification:** This helped confirm my evolving judgement and decision to focus mainly on Hugh's understanding of mathematics.

### Addendum at end of Singularity Studies

I think it is worthwhile mentioning that I presented a paper at the Educational Studies Association of Ireland (E.S.A.I.) Annual Conference in the National University of Ireland, Dublin on March 27th, 1999. My paper focuses on my 1995 study of a singularity and the title is *'Utilizing an Educational Action Research Approach: Facilitating More Democratic Actions in the Classroom'*. This paper was published in revised form in the *Irish Educational Studies* journal in April 2000. My point here is that the public arena within which I share some of the social practices of my teaching and educational action research has expanded considerably for me since May 1994 [pp. 310-313 of the Appendices]. I am presently a member of E.S.A.I. (June 2000).

Central Action Research Influences in My Work

*Jack Whitehead*

Whitehead (1985, 1993) has been the key influence in my endeavour to create my own educational theory in my thesis. In particular, in adopting a living educational theory approach to action research in my enquiry, I have drawn on Whitehead's notions of:

(a) unit of appraisal [my claim to know my own educational development (which includes a fuller understanding of my changing practices)],

(b) action-reflection cycles (which incorporate my 'I' as a living contradiction and imagined solutions to overcome these contradictions in practice),

(c) educational theory as descriptions and explanations of my own educational development as I ask, research, and respond to the question, '*How can I help you to improve your learning?*' (Laidlaw and Whitehead, 1995: p. 2), and

(d) the development and explication of an original set of standards of judgement, which constitute (i) values which I attempt to live out more fully in my teaching and action research practices, and (ii) central criteria by which I wish my work and my knowledge claims to be judged by myself and others.

Whilst educational methodology is important in Whitehead's (2000: p. 95) work, I think his broader contribution is in the arena of 'living educational theory' as an original educational epistemology of practice. A crucial part of understanding my own educational theory as an educational epistemology of practice, I maintain, is in recognizing my original set of methodological, educational, and social standards of judgement [pp. 45-56] as central characteristic features of my work [mid-page 280 and bottom of page 281].

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### *Wilfred Carr and Stephen Kemmis*

In 'Three Working Definitions of Action Research' [pp. 42-45], I have acknowledged the importance of Carr's and Kemmis's (1986: p. 162) definition of action research for my work, especially in the arena of improving the rationality and justice of (i) my practices and (ii) my understanding of my practices. Hopkins (1993: p. 44) acknowledges the importance of this definition, as does Whitehead (1993: p. 53). I note in particular the parallel between 'Social Philosophy Informing My Fuller Understanding of My Educational Practice' [pp. 280-281] and Carr's and Kemmis's notion of *improving the rationality and justice of my understanding of my practices*.

I have also noted [page 295], drawing on Carr and Kemmis (1986: p. 165), that my spiral of action-reflection cycles [pp. 61-74 and pp. 295-300], my social practices susceptible of improvement, and greater involvement of participants, show that my work, at a minimal level, qualifies as action research. I am not implying that this is the only justification for my work qualifying as action research, but it is an evidential support.

Whilst my own living educational theory approach to action research is critical and creative it is not a critical social science like that employed by Carr and Kemmis (1986) [Footnote 1, page 54]. However, when I analyse contrasting approaches to educational research<sup>1</sup>, I have to say that I place a significant part of my philosophical sympathies somewhere along an interpretivist-critical continuum.

McKernan (1996: pp. 259-260) believes that Habermas's grand theory and the difficulty of language within the 'becoming critical' model of Carr and Kemmis (1986) are inappropriate for good action research by teachers. I can't make a judgement for all teachers, but in my own action research I have preferred to let my own educational theory

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<sup>1</sup> Lincoln and Guba (1985: p. 37), Carr and Kemmis (1986: pp. 51-154), Cohen and Manion (1994: pp. 9-11), Maykut and Morehouse (1994) *Beginning Qualitative Research: A Philosophic and Practical Guide*, pp. 11-12. London and Washington D.C.: The Falmer Press, Bassey (1995: pp. 12-14), Smith (1996: p. 75).

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grow in an a posteriori fashion from significant themes in my own teaching and action research practices [page vii and page 281], as I respond to the following question, addressed to my sixth form students, *'How can I help you to improve your learning?'*. Nevertheless, as noted above, I have gleaned some useful insights from Carr and Kemmis (1986).

Furthermore, Carr and Kemmis (1986: pp. 71-79 and page 135) recognize that a positivist view of science operative within educational theory and practice leads to a narrow and distorted belief that the only kind of legitimate knowledge is technical knowledge. This echoes Schön's (1983: pp. 3-69)<sup>1</sup> discernment of a positivist view of science (Schön, 1983: p. 48) centrally informing a dominant view of professional knowledge as one of technical rationality. These incomplete models, precisely because they are recognized as being incomplete<sup>2</sup>, can then lend support to Schön's call for some movement from technical rationality to reflection-in-action in a broader epistemology of practice (Schön, 1983: p. 49). In this way, insights from Carr and Kemmis (1986) can lend support to Schön's notion of reflection-in-action through which:

*(a professional) can surface and criticize tacit understandings that have grown up around the repetitive experiences of a specialised practice, and can make new sense of the situations of uncertainty or uniqueness which s/he may allow herself/himself to experience. (Schön, 1983: p. 61)*

In my work I have emphasized the importance of making tacit understandings more explicit through dialogic reflections with self and others<sup>3</sup>.

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<sup>1</sup> Schön, D. (1983) *The Reflective Practitioner*. Arena.

<sup>2</sup> I think it is important to recognize that *'Habermas is not - concerned to denigrate technical knowledge, but only to reject any claim that it is the only type of legitimate knowledge'* (Carr and Kemmis, 1986: p. 135).

<sup>3</sup> See, for example, page 23, Footnote 2 on the same page, and page 53.

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### *John Elliott*

John Elliott has significantly influenced my work in this thesis. He has helped me to appreciate the articulation of the realization of values within Whitehead's (1989) work [and my own work] as constituting both descriptions and explanations because of the inseparability of means and ends in living out values more fully in practice (Elliott, 1989) [page 120]. For Elliott, educational research is a moral endeavour in that it seeks to realize values in practice (McKernan, 1996: p. 23).

Elliott's (1993) work has introduced me to Giddens's (1979) notion of structuration [pp. 196-197], which I explain in more detail on pp. 212-215. In relation to my own specific 1994-1997 social justice contexts, I build on Giddens's theory of structuration and on some of Elliott's general understandings of Giddens's work [pp. 223-224]. Page 222 shows that I am learning to incorporate the notions of social practices and structuration into my own vision of social justice.

For me, the central importance of the notion of structuration is that it can help dissolve the structure/agency dichotomy by focusing on the possibility of individuals and groups changing rules and resources<sup>1</sup> operative within social practices for the better [page 213]. I fully appreciate that there are some external constraints over which we have no control<sup>2</sup>. Nevertheless, I maintain that when structure is strongly accentuated as constraint within the critical paradigm, individuals can oftentimes be theorised into discursive and action positions of greater weakness than is necessary [page 213]. This reservation with the critical paradigm is echoed in Elliott's (1993a) refutation of '*the determinism of the post-Marxian notion of "false consciousness"*' (Somekh, 1995: p. 349) within Carr's and Kemmis's (1986) notion of emancipatory action research:

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<sup>1</sup> See page 196.

<sup>2</sup> It is also possible that some external constraints may be unacknowledged.



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*I cannot see why practical reflection, which is interested in how to act consistently with the values embedded in our social traditions, need not require us to think critically about values. --- Habermas tends to assume that social traditions are unchanging mechanisms of ideological suppression from which human beings need to be emancipated.* (Elliott. 1993a: p. 197)<sup>1</sup>

The critical interest '*involves questioning taken-for-granted thoughts, feelings, and actions*'; however, Elliott (1993a: p. 197) argues that there is no need for separate practical and critical interests and their respective action researches, as espoused by Carr and Kemmis (1986), because practical reflection incorporates the critical aspect as an intrinsic dimension: Elliott (1993a: p. 197) maintains that this critical aspect serves an evolutionary interest. Therefore, it seems to me that, through dialogic reflections with self and others, values embedded in social practices may be more accessible and less '*embedded*' than is claimed by the emancipatory action research model of Carr and Kemmis (1986). It is in this sense that the possibility of transforming practical consciousness into discursive consciousness (Giddens, 1979: p. 5)<sup>2</sup> arises in my educational practices.

Elliott supports and communicates a bottom-up classroom action research approach to school and curriculum development (1998: p. 178). Whilst my own work has a curricular emphasis in the 1996 and 1997 singularity studies, it is not curriculum action research. Nonetheless, in my action research and teaching practices, I feel affirmed and not excluded by the writings of Elliott. The fact that I place a significant portion of my philosophical sympathies somewhere along an interpretivist-critical continuum probably means that there is a fair deal of common ground. Indeed, Elliott claims that there is a sense in which '*action research constitutes an outcome of the development of the interpretative social science paradigm*' (McKernan, 1996: p. ix). Furthermore, I appreciate that Elliott (1993a: p. 185) emphasizes '*the hermeneutic nature of inquiry for understanding*' (McKernan, 1996: p. 21).

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<sup>1</sup> Elliott, J. (1993a) *Reconstructing Teacher Education*. London and Washington D.C.: The Falmer Press.

<sup>2</sup> Footnote 2, page 23.

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*Pam Lomax*

Lomax's (1994: p. 121) notion that the *'patterns and themes are the "green shoots" of theory that is grounded in the events you describe'* has been a centrally important influence in my decision to adopt a thematic approach in more fully understanding my work and when writing my thesis [page 74 and page 281]. I found this a most appropriate disposition to adopt, taking into account the emergent-design nature of my enquiry (Lincoln and Guba, 1985: p. 208-211).

In terms of criteria for judging action research, Lomax (1994: p. 118) proffers *'authenticity of the research claims'* as one of two key criteria. Authenticity is an important social standard of judgement in my own work [pp. 54-55]. In my view, my research claims have a better chance of being considered authentic if I am authentic: the authenticity for my enquiry includes the notion of my *'sustained commitment to living prized values more fully over time'* [page 55]. However, it's important to note that it has not been my intention to create a victory narrative in my account. Some of my recent reading aptly captures the ongoing and provisional nature of the dialectic:

*'Human authenticity is never some pure and serene and secure possession. It is ever a withdrawal from inauthenticity, and every successful withdrawal only brings to light the need for still further withdrawals.'* (Moloney, 2000: p. 71)<sup>1</sup>

Thus, I readily acknowledge that there is a degree of provisionality to my thesis in that my thesis is offered at a particular point in time but my learning continues.

Pam Lomax and Jack Whitehead have worked together for a number of years. Lomax (Lomax and Whitehead, 1998: p. 452), in relation to establishing a provisional equilibrium of opposites within praxis<sup>2</sup>, stresses the importance of a double dialectic of learning within

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<sup>1</sup> Moloney, R. (2000) The Person as Subject of Spirituality in the Writings of Bernard Lonergan. *Milltown Studies*, No. 45, pp. 66-80. Moloney is drawing on Lonergan (1972: p. 110) here.

<sup>2</sup> Lomax (Lomax and Whitehead, 1998: p. 451) defines praxis as *'informed, committed, intentional action'*.

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the process of externalising or representing our meanings both to ourselves and others. The double dialectic involves an intra-subjective dialectic and an inter-subjective dialectic which challenge us to re-think our practices, understandings, and situations. To me, Lomax's double dialectic constitutes specific 'living contradictions' experienced in dialogic reflections with self and dialogic reflections with others. In my work, I have emphasized the importance of dialogic reflections with self and others<sup>1</sup> and I include these meanings within my educative-relational standard of judgement for judging my work and my claims to knowledge [page 53]. The important dimension that Lomax adds, I believe, is in stressing that we '*externalise or represent our meanings*' within our dialogic reflections with self and others.

Finally, like Lomax (1994: p. 118), I too believe it is important that '*action research projects have an application elsewhere*'. Both Lomax (1994) and Bassey (1999) have been influential in helping me to realize the importance of addressing the question, 'What's in My Work for Others?'. In Section 3 of Chapter Twelve [pp. 277-281], I suggest that there are seven areas of my work that could have applications elsewhere. I respond to the question in a way that does not deny the living educational theory, action research, singularity study nature of my enquiry [page 277].

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<sup>1</sup> Including researchers in the literature.

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*Susan Noffke*

Earlier [pp. 134-135 and page 192], I have debated with a small, but relevant, portion of Noffke's (1997) extensive review of action research literature. Whilst I think it is inappropriate in this section of the Appendices to engage in a review of a review, it seems to me that the following is one of the most significant points made by Noffke:

*the dual agenda of interrogating the meanings of democracy and social justice at the same time as we act to alter the social situation shapes [I prefer 'helps shape'] the potential of action research.* (Noffke, 1997: p. 334)

Two of the main themes in my thesis are democracy [Part Two] and social justice [Part Three]. These themes did not arise artificially in my work to match Noffke's meanings but emerged in an a posteriori fashion from my teaching and action research practices<sup>1</sup>.

I acknowledge the trade-off incurred in my change of social-educational practices from January 1998 until September 1999 [page 296]. Nevertheless, in my enquiry I have (i) interrogated the meanings of democracy and social justice in relation to my practices and (ii) engaged in changing my educational practices for the better in my 1994, 1995, 1996, and 1997 singularity studies. Furthermore, I have incorporated these two themes into criteria for judging my practices, my account and my claims to knowledge [page 52]:

- *Do I truly engage in more democratic actions in the classroom as I help my sixth form students to improve their learning?* [Part Two]
- *Do I genuinely partake in more socially just actions in the classroom as I help some of the most 'disadvantaged' students to improve their learning?* [Part Three]

Noffke (1997) confirms the importance of democracy and social justice in action research, as does Howe (1995: p. 34) who sees '*democracy and justice functioning as the overarching ideals*'. I have also attempted to relate these themes to teaching and learning.

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<sup>1</sup> I obtained Noffke's (1997) paper after I had discerned more democratic actions and more socially just actions as significant themes in my enquiry worth exploring further.

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### *Bridget Somekh*

Whilst Elliott's (1993) work drew me to Giddens's (1979) work, it was Somekh (1995) who first drew me to the importance of '*Action Research and the Structure-Agency Debate*' (Somekh, 1995: pp. 348-350) and to Elliott's extension of Giddens's notion of structuration [page 196]. For me, the notion of the duality of structure [213], which is a key concept in understanding 'structuration', helps me keep in mind that through social practices I can play a part, however small, in reproducing or transforming rules and resources operative within social practices.

For example, at a recent staff meeting [April 2000] I was battling against the notion of having nine lessons in a day<sup>1</sup>, which is the situation for some of the teachers in our school. This trend has crept in over the last five years or so. I went as far as saying that there is a sense in which it could be argued that our previous principal had institutionalized a social practice which was, in effect, anti-educational, because it left no time for a teacher to reflect on lessons, or even, to take a break. I also asked for more work-surfaces for teachers in the resource room. Some of the teachers in our school are wandering teachers<sup>2</sup> and oftentimes it is difficult to get a place in which to work during a 'free' class. I was conscious of the fact that I was fighting against the idea of nine lessons in a day becoming a 'rule' and that table-space is a resource issue<sup>3</sup>. To me, these are some of the practicalities of understanding structures as rule-resource properties of social practices (Giddens, 1979: p. 64). On another level, I believe I am trying to bring about more human working conditions in my education workplace.

Another highly important point of appeal for me in Somekh's (1995) work is Somekh's inclusive disposition towards action research:

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<sup>1</sup> In our school we teach thirty-five lessons a week.

<sup>2</sup> These are teachers who don't have a fixed classroom for all of their lessons - usually the most recent teachers to come into the school.

<sup>3</sup> Relationships are fairly open in our school. The principal had invited submissions for an agenda a few days before the staff meeting and I had given him a half-page of my reflections.

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*I have tried hard to be inclusive rather than exclusive in my approach to action research, rejecting, for example, the polarisation between a Cambridge-East Anglian and a Bath school of action research in the UK of the kind which McNiff (1988: p. xvii) identifies. (Somekh, 1995: p. 339)*

In my own living educational theory approach to action research, I maintain that I, too, have tried to be inclusive, as inferred by my educative-relational standard of judgement for my enquiry:

*When creating my own educational theory, alongside my dialogic reflections with self, do I engage in sufficiently high quality dialogic reflections with others [students, critical friends, key respondents, and researchers in the literature] in a way which shows a sustained and growing commitment<sup>1</sup> to democracy, social justice, and an appreciation of the other's conceptual vision? [page 53]*

In my view, both methodology and epistemology are important in educational action research, as I believe they are for McNiff (1988) and Whitehead (1985, 1993, 2000).

With regard to the role of self in action research, rather than Somekh's (1995: p. 348) notion of multiple selves, which I am not arguing against, I tend to think in terms of the involvement of my singular but complex self in multiple roles, with the accompanying notions of role-shaping and role-expectations, both internal and external<sup>2</sup>.

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<sup>1</sup> Footnote 2, page 23, is relevant here.

<sup>2</sup> For some of my understanding of roles I draw on Super, D. (1980) A Life-Span, Life-Space Approach to Career Development, *Journal of Vocational Behavior*, Vol. 16, pp. 282-298.

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*Melanie Walker*

Other criteria against which I wish to measure my work are contained in Walker's (1995) view that:

*a theoretically informed action research is one way forward towards a different construction of teachers (in schools and universities) as flexible, critical and reflective practitioners able to develop quality education, and realise core values of equity and justice. (Walker, 1995: p. 23)*

I believe I still have some way to go regarding greater flexibility and developing greater quality education. However, in my enquiry I contend that the quality of education (teaching and learning) in my singularity studies did improve somewhat. I'd like to think that my work is theoretically informed with an appropriate balance of practical action and social and textual encounters, as espoused by Walker (1995: pp. 17-18). However, I've stated earlier that it's important to recognize that the green shoots of my theory emanate from my educational practices in the classroom [page 281]. Nonetheless, I am in agreement with Walker (1995: pp. 18-19) that *'theory is not only what is written down'* and, furthermore, that *'theory does not stand back from or apart from practice, but engages and intervenes'*.

With regard to the notion of a reflective practitioner attempting to realize core values of equity and justice, I believe I have provided sufficient evidence in my thesis to support my claim that:

*My work also shows that I have become a more reflective practitioner as I dialogue with the writings of other educators whilst seeking to relate my values concerning democratic action and social justice to my classroom teaching. [Abstract, page ii]*

My educative-relational standard of judgement [page 53] is also relevant here.

Finally, on the hugely important issues of gender and gendered language, I've tried to use female/male equivalents where appropriate in my thesis.

## **UTILIZING AN EDUCATIONAL ACTION RESEARCH APPROACH: FACILITATING MORE DEMOCRATIC ACTIONS IN THE CLASSROOM**

**James Finnegan**

### **Some Literature Helping to Create an Epistemological Context - the Political Strand**

Burke (1992, p. 79) notes Shulman's (1987a) assertion that the knowledge base of teaching has multiple sources far deeper, richer and more extensive than that provided by empirical research alone and that the "Wisdom of Practice" is one enormously rich source of knowledge about teaching which has remained largely untapped by educational researchers. However, Shulman (1987a and 1987b), whilst communicating a deep respect for teachers, fails to see teachers in the role of educational researchers writing the final report (a paper or thesis) of some of their own "wisdom of practice". Similar, perhaps inadvertent, downplay of teachers' capacities to create/articulate a significant part of their own knowledge base in teaching can be discerned in other literature (e.g. Socket, 1987; Hoyle and John, 1995; Hargreaves, 1996 and 1997; Hammersley, 1997).

Bassey (1995, pp. 38-47) distinguishes between (i) educational research (which he sees as a discipline in its own right) and (ii) philosophical, sociological, psychological, historical, and economic researches in educational settings. My case-study work falls within the arena of educational action research, which can be viewed as a subset of educational research (Bassey, 1995, p. 46). In this particular kind of educational research, I am a practitioner engaged in the process of improving my own practice. Furthermore, in describing and explaining my teaching and educational action research practices as I work at improving my teaching and helping my sixth-form (17-18 year-old) students to improve their learning, I contend that I am creating my own educational theory (Whitehead, 1993). Claiming to create my own educational theory, as a teacher, is clearly a political issue, or to say it differently, an issue of power. My own argument, I maintain, emanates from a position of reasonable and responsible self-advocacy where I account for my own



changing practices and for my own growing understanding of those changing practices (Hopkins, 1993, p. 44; Carr and Kemmis, 1986, p. 180).

Helping me to find relevance for my work in an Irish context, Sugrue and Ui Thuama (1994, p. 121) note “the dominant position of positivistic research” in both the Republic of Ireland and Northern Ireland and argue that “to provide a comprehensive picture of any educational system, it is necessary to conduct different kinds of research from a variety of perspectives, employing different modes of enquiry. In the absence of this a very one-sided version of the multiple realities of schooling is likely to emerge”. Also pertinent is that, unlike a lot of 1980 and 1990 post-graduate theses in Ireland (Sugrue and Ui Thuama, p. 123), I examine my working context and professional actions to a significant degree.

My action research work as a teacher creating my own educational theory involves four case studies of my teaching (1994, 1995, 1996, 1997), where my overarching research question is: “How do I communicate my way of knowing my educational development<sup>1</sup>, and my way of helping my sixth form students to improve their learning, within and through case studies of my teaching”? In this paper I focus on my 1995 case study which lends support to the following claims:

In helping to facilitate an expression of student voices in the process of helping my students to improve their learning, I enable the sixth form students and myself to engage in more democratic actions and more egalitarian power relations in the classroom through the elicitation/creation, greater enactment, and evaluation of teaching/learning communicative activities.

An evidential claim for the above main claim is: Improved learning and improved grades in tests occur for the majority of the sixth form students.  
(Abstract, 1999)

The remainder of the paper is arranged as follows:

- My educational action research methodology
- Teaching/learning communicative activities and critical friends
- Some action research outcomes
- Implications and conclusions

### **My Educational Action Research Methodology**

#### *Action-reflection cycle*

Drawing on the work of Whitehead (1993), I utilized a systematic action-reflection cycle<sup>2</sup> which constitutes a method for improving my practice and for bringing my enquiry forward. The cycle is:

- I experience a concern/problem when some of my educational values are negated in my practice. (problem)
- I imagine a solution to my problems. (idea)
- I act in the direction of a chosen solution. (action)
- I evaluate the outcomes of my actions. (evaluation)
- I modify my problems, ideas and actions in the light of my evaluations.

(Whitehead, 1985, p. 54)

In my 1995 case study, along with this standard of judgement, I also utilized the criterion of dialectical logic where I worked to negate the “living contradiction” aspects associated with the first step of the above action-cycle. Another methodological point worth emphasizing here is that the greater enactment of these teaching activities constituted the central web of “imagined solutions” for my 1995 case study.

#### *Data generation and triangulation*

The following excerpt from my 1995 report gives an indication of some methodological understandings and practices for my 1995 case study:

In the 1995 study, I used a dialogic approach in eliciting some of the student learning needs (questionnaire + open discussion). There have been more observations (structured and open) than in my 1994 study and each observation has been longer (students, Joe English - a teaching colleague and a critical friend, Austrian girls, and Guido - a teacher from Germany). There have been audiotaped conversations with my students (twice) and with Joe English (twice), seeking feedback on the implementation of teaching/learning communicative activities: the videocamera has been used twice in class to gain data for this purpose.

I have engaged in triangulation (Denzin, 1978 in Forward, 1989, p. 35) of: *evaluators* (students, Joe English, and myself); *sources of data* (questionnaires, audiotapes, videotapes, observations); *methods for a single event* [for example, Thursday, January 12th, 1995 - the beginning of the project - , students writing on their own, followed by groupwork, followed by an open discussion, and finally followed by an audiotaped conversation with Ronan (a sixth form student and critical friend) on Friday 13th]; and, finally, *of different perspectives to interpret data* (I utilize some statistical analysis within a qualitative action research mode of enquiry).

### *The rigour of my methodology*

Firstly, I believe the following three principles of Winter's (1989, pp. 38-68) suggested six principles for the rigorous conduct of action research act as a testing ground against which to judge some of the rigour of my work:

#### *(i) Collaborative resource*

I am taking "Collaboration" to mean: "everyone's point of view will be taken as a contribution to resources for understanding; no-one's point of view will be taken as the final understanding as to what all the other points of view really mean" (Winter, 1989, p. 56). In my work I attempted to accommodate and not eclipse the "voice" of the other, whether that other is a student, a critical friend, a key respondent, or a researcher in the literature.

*(ii) Risk*

Regarding “Risk”, I took the risk of asking senior students to suggest ways in which I could improve my teaching practice in 1995 (this also occurred in my 1994 and 1996 case studies). I found this somewhat nerve-wracking and experienced a moderate to high degree of personal and professional vulnerability in initiating the action research process each year where I attempted to elicit “living contradiction” elements in my teaching practice which some of the students felt I needed to work on as one way of helping them to improve their learning. Also, there was some risk involved in having my accounts, ideas, and practice subjected to critique by critical friends and key respondents.

*(iii) Theory-Practice transformation*

In relation to “Theory-Practice Transformation”, I believe my work communicates that I see theory and practice not as two totally separate entities but as “two different yet interdependent and complementary phases of the change process” (Winter, 1989, p. 66). Winter (1996, p. 14) also refers to this principle for the conduct of action research as “theory and practice internalised”.

Secondly, I contend that I have engaged in “Reflexivity” in the process of writing my case study. Just as there is an in-built reflexive process within the action-reflection cycle so too is there a reflexive process at work in my writing where I am constantly reflecting back critically on previous critical reflections .

## **Teaching/Learning Communicative Activities and Critical Friends**

### *Teaching/learning communicative activities*

- LI** = **L**inking to previous day's work.
- ECSTOT** = **E**xplaining **C**learly, **S**tating my **T**rain **O**f **T**hought.
- ECTW** = **E**xplaining **C**learly, timing of my **T**alking when **W**riting on the blackboard.
- GS** = **G**oing **S**lowly; that is, at a slow enough pace for all students to understand.
- IQ** = **I**nviting the students to ask **Q**uestions.
- SU** = **G**iving a **S**Ummary at the end of the lesson.

The above teaching/learning communicative activities arose in an interesting emergent-design fashion where I was initially focusing on the sixth form students' lack of question-asking when invited by me to do so during mathematics lessons. The communicative activities were elicited/created in collaboration with my sixth form students at the beginning of the project (Thursday, January 12th, 1995 - see "Data generation and triangulation"). Following Lonergan, I take communication to mean the sharing of a lived meaning as well as the transmittal of a message (Lonergan, 1972, as in Savary, 1974, p. 48); therefore, I felt that "communicative" would constitute a most appropriate adjective for describing how the activities emerged.

### *Comments from three sixth-form students*

Regarding the connections between what I was doing and the students' learning, below are some incisive written comments from three of the sixth-form mathematics students who acted as "critical friends" to me during the 1995 case study. The comments are excerpts from the students' responses to a question from a May 1995 questionnaire, "In what ways did your understandings of mathematics improve between 12-01-1995 and 30-03-1995 ?" (the duration of the project). I also asked the students to comment on the

mean rating of 1.95 given by the the whole class for their improved “understanding of mathematics” during the project (the rating scale after table 1 ahead was used).

*Kenneth K*

In opening I feel that the second video was much more productive than the first<sup>3</sup> and that the discussion afterwards was, in my opinion, very successful. In general I find that your explaining of your train of thought [ECSTOT] has definitely improved which in conjunction with the explanation of other approaches [generating alternatives], both explains to those who could not do the question, how to do it, and also broadens the thought process of those who could, thus promoting adaptability.

In relation to the statistical analysis you performed, I would say that the figures certainly have some meaning. In relation to the 1.95 figure<sup>4</sup> [for Understanding of Mathematics], I would say that this confirms that the majority of the class feel that their understanding of maths has shown a reasonable improvement, and that a notable proportion of this was due to your changing practice. In conclusion, I feel that your change in practice, although not huge [I agree], has led to a more relaxed atmosphere in the classroom, leading to students having greater confidence in themselves and therefore being able to take advantage of the class so as to better their understanding of mathematics. (Kenneth K, 1995)

*Kieran McG*

“Did my understanding of mathematics improve between the making of the two videos?”

Yes. Why?

I didn't think that this greater understanding was achieved by any one factor. If one aspect of the learning process is altered it will not in itself bring about better understanding. There were a host of changes; more study being done, increase in maturity, working towards a goal, familiarity with the course.

“Was a better working atmosphere created?” Yes. Why?

Your research may have been a contributory factor here. I think it - not because of the actual question you were seeking to answer [“How can I help you to improve your learning and contribute to your educational development?”] but because you involved the class at a basic level in your research - lessened the gap between teacher and student. This factor plus the

maturity of the class in their attitude to work did create a good atmosphere for the last few months' work.

"How big a contributory factor was it?"

Impossible to say! But I would guess somewhere around helpful and worthwhile. (Kieran McG, 1995)

*Ronan M*

I think that the "ratings" of teaching practice are a fair reflection on the efforts made by the teacher to adapt to the student suggestions of January 12th, 1995.

The students have given a 1.95 rating [mean value] to their understanding of mathematics [UM]. So what does this figure mean? I think that this figure of 1.95 means that students are now able to grasp/understand topics whilst they are being covered in school rather than having to study them at home and, in this sense, their understanding of maths has improved. (Ronan M, 1995)

### *Critical friends*

Joe English (a teaching colleague) viewed two videoed lessons (Feb 2nd, 1995 and Mar 30th, 1995) and proffered feedback on the six teaching/learning communicative activities and on other areas that Joe felt were relevant; Guido, a visiting teacher from Germany, observed two of my lessons (Feb 9th, 1995) and likewise proffered structured feedback on the six activities and other open feedback. A group of five sixth form mathematics students (Ronan, Eoghan, Kenneth, Kieran, and Donnan) gave feedback on the two videoed lessons and also on a number of other occasions.

### *Key respondent*

Jack Whitehead, University of Bath, read my 1995 case study report, and gave me written feedback.

## **Some Action Research Outcomes<sup>5</sup>**

### *Utilizing numbers within a qualitative mode of enquiry*

Table 1 shows that for a majority of the sixth form mathematics students:

- I improved from slightly to a reasonable amount during the 1995 enquiry (January 12th until March 30th) for Explaining Clearly -Stating my Train Of Thought (ECSTOT), Explaining Clearly - timing of Talking when Writing (ECTW), Going more Slowly (GS), and giving a SUMmary at the end of a lesson (SU).
- I improved by a reasonable amount or more for Linking to the previous day's work (LI); and, finally,
- I improved 'a fair bit' or more for Inviting the students to ask Questions (IQ).

The mean values were judged to have .01 levels of significance using Wilcoxon's T statistic.

### *Tabulating students' mathematics results*

It is worth bearing in mind that, as well as the majority of the students claiming that their understanding of mathematics improved during the project [see endnote 4], every student improved his mathematics grade between February 1995 and June 1995 and the overall improvement for the whole class was terrific as confirmed by Table 2 and Table 3.



**Table 1** Students' responses for the six teaching activities.

| Name of Student | LI          | ECSTOT      | ECTW        | GS          | IQ          | SU          |
|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Seamus B.       | 1           | 1           | 3           | 1           | 1           | 3           |
| James B.        | 2.5         | 2           | 2           | 3           | 3           | 1           |
| Adrian C.       | 4           | 2           | 2.5         | 0           | 3           | 2           |
| Shane F.        | 3           | 3           | 3           | 3           | 5           | 3           |
| Eoin G.         | 1           | 2           | 2.5         | 3           | 0           | 2           |
| Donnan H.       | 2           | 1.5         | 3           | 0           | 3.5         | 0.5         |
| Ruaidri H.      | 2           | 2           | 1           | 3           | 2           | 2           |
| Manus K.        | 2.5         | 1.3         | 0.5         | 1.8         | 1.5         | 1           |
| Kenneth K.      | 1           | 3           | 1           | 0           | 3           | 0           |
| William M.      | 5           | -1          | 1           | 3           | 3           | 5           |
| James M.        | 3           | 1           | 2           | 2           | 5           | 1           |
| Adrian M.       | 3           | 3           | 1.5         | 2.2         | 1.8         | 1           |
| Kieran M.       | 2           | 4           | 3           | 3           | 1           | 3           |
| Dermot M.       | 3           | 1           | 1           | 2           | 2           | 1           |
| Thomas M.       | 3           | 1           | 1           | 1           | 5           | 1           |
| Damien Mg.      | 1.57        | 0.52        | -1.01       | -3.4        | 3.2         | 1.2         |
| Ronan M.        | 3           | 5           | 5           | 1           | 3           | 1           |
| Damien Mn.      | 3           | 0           | 1           | 1           | 3           | 1           |
| Garvan M.       | 0           | 0           | 0           | 1           | 1           | 1           |
| Barry O.        | 0           | 1           | 1           | 0           | 3           | 0           |
| Finbar O.       | 1           | 2           | 0           | -1          | 3           | 1           |
| Eoghan R.       | 4.6         | 3.2         | 3.4         | 1.4         | 3           | 4.8         |
| Shane S.        | 0           | 1           | 1           | 1           | 3           | 0           |
| <b>MEAN</b>     | <b>2.22</b> | <b>1.72</b> | <b>1.67</b> | <b>1.26</b> | <b>2.70</b> | <b>1.59</b> |
| <b>VALUE</b>    |             |             |             |             |             |             |

The following scale was used:

| Rating | Verbal Description     |
|--------|------------------------|
| -5     | disimproved a lot      |
| -3     | disimproved a fair bit |
| -1     | disimproved slightly   |
| 0      | same                   |
| 1      | improved slightly      |
| 3      | improved a fair bit    |
| 5      | improved a lot         |

**Table 2 Sixth form students' February and June results\* (1995).**

| <b>Name Of Student</b> | <b>Mathematics Result February 1995<br/>(Trial Leaving Certificate)</b> | <b>Mathematics Result June 1995<br/>(Leaving Certificate)</b> |
|------------------------|---|---|
| Seamas B.              | B2  | B1  |
| James B.               | B3  | A2  |
| Adrian C.              | D2  | C1  |
| Shane F.               | D3  | D2  |
| Eoin G.                | F   | C2  |
| Donnan H.              | E   | C3  |
| Ruaidrí H.             | F   | D2  |
| Manus K.               | D3  | B3  |
| Kenneth K.             | D1  | B2  |
| William M.             | F   | E   |
| James M.               | D3  | D1  |
| Adrian M.              | E   | C1  |
| Kieran M.              | F   | C3  |
| Dermot M.              | F   | D2  |
| Thomas M.              | F   | D1  |
| Damien Mg.             | E   | D2  |
| Ronan M.               | C1  | A2  |
| Damien Mn.             | D3  | B3  |
| Garvan M.              | F   | C2  |
| Barry O.               | E   | C2  |
| Finbar O.              | D3  | C3  |
| Eoghan R.              | D1  | B2  |
| Shane S.               | E   | C3  |

\* Honour = A,B,C; Pass = D; Fail = E,F.

**Table 3 Numbers of students obtaining an honour, pass, and fail in mathematics.**

| <b>Examination</b>                        | <b>Number of Students Obtaining an Honour</b> | <b>Number of Students Obtaining a Pass</b> | <b>Number of Students Failing</b> |
|---|---|--|-----------------------------------|
| Trial Leaving Certificate (February 1995) | 3 students                                    | 8 students                                 | 12 students                       |
| Leaving Certificate (June 1995)           | 16 students                                   | 6 students                                 | 1 student                         |

I believe my improved teaching practice during this classroom action research enquiry, which lasted from January 12th, 1995 until March 30th, 1995<sup>6</sup>, contributed to the sixth form students' improved understanding of mathematics between February and June, and to their better examination results in June 1995. I am in no way inferring a linear cause-

and-effect relationship here and am anxious to overtly acknowledge that improving one's learning is clearly a multifactorial process. For example, see the first main paragraph of Kieran McG's comments and the second paragraphs of Kenneth K's and Ronan M's comments in the previous section; or to take an example from information-processing theory (Wood, 1998, p. 70), improvements in learning could come about because of a student's increased speed of processing or increased processing capacity.

### **Implications and Conclusions**

#### *A mode of associated living, of conjoint communicated experiences*

I claim that in collaboratively eliciting/creating, enacting more fully, and evaluating the six teaching/learning communicative activities, the sixth form students and I were in engaging in more democratic actions in the classroom. I am struck by the remarkable resonance between the notion of communication as the sharing of a lived meaning and the emphasis, according to Rockefeller (1991, p. 240), on communication and shared experience within Dewey's (1916, p. 87) notion of democracy as "more than a form of government; it is primarily a mode of associated living, of conjoint communicated experiences".

Rockefeller (1991, p. 246) notes:

Dewey's point is not that all associated life automatically provides one with a sense of communion, as some critics seem to suppose, but simply that insofar as a person adopts democratic attitudes and genuinely opens his or her mind and heart to the experience and needs of diverse individuals and groups the sense of belonging, of community, which sustains life is deepened.

All of my sixth-form students had experienced my teaching for at least a year (and some for two or three years as Junior students) and, therefore, when they were suggesting ways in which they felt I could improve my teaching (via questionnaire, groupwork, and open

discussion) they were drawing on their experiences of my teaching and also stating some of their learning needs. It is my contention that in the 1995 case study I opened up my mind more fully to some of the experiences and needs of my sixth form mathematics students and that, in this opening up, I was adopting a more democratic attitude within the educative relationships between the final year students and me.

### *My own future research*

Further, to my mind, the intersubjective meanings within *teaching/learning communicative activities* involve notions of “associated living” and “shared experiences” and as such are potentially profoundly democratic, despite the fact that Dewey (1916) has been criticized for not defining his terms precisely in *Democracy and Education* (Rockefeller, 1991, p. 238) and also despite the limitation that my particular ways of helping my students to improve their learning may have placed too much emphasis on what I was doing and not enough attention on the students’ learning - an unintended consequence of action (Giddens, 1979, p. 56). Gladly, in my third case study (1996) I attempted to rectify that limitation somewhat and in my fourth study (1997) I concentrated solely on an individual sixth form student’s learning in mathematics.

### *Taking more accurate account of sixth-form students’ social maturity*

Rudduck, Chaplain, and Wallace (1996, p. 177) see “assumptions about what a pupil is” as constituting some of the “deep structures of schooling”. In particular, Rudduck (1996, p. 13) stresses the urgent need to review the conditions of learning in secondary schools in order to ensure that they offer appropriate support to young people and take more accurate account of their social maturity in the serious task of learning. I believe my research has helped to move my teaching in the direction of taking more accurate account of my sixth form students’ social maturity.

In connection with promoting more democratic actions in the school and the classroom, Rudduck (1995, p. 11) has also earlier emphasised the importance of listening to “student voices”: “We need, in particular, to hear the voices of students and to give attention to their perspectives on the experience of being a learner in school”. In my view, my own work responds to this challenge.

I concur with Rudduck’s contention that “expert witness”, rather than partner in change (Rudduck, 1996, p. 13), better describes what is possible for young people in schools; the term “partner in change”, in my view, disguises the very real differences in power between those who are paid to provide a service and the learners who receive no money while learning. Additionally, like Rudduck, I too am drawn to, what I believe is, the more realistic notion of granting students a “limited franchise” (Polan, 1989). In this regard, Polan (1989) argues that “it is no compromise or betrayal of democratic principles, nor is it a sham or a confidence trick to extend to children in school a franchise that is limited, and for the already enfranchised to determine what those limits might be” (Polan, 1989, p. 41). However, I would go further than Polan (1989) and argue that sixth-form students can become some of the “already enfranchised”.

*Transferability: a potential contribution to teachers’ and lecturers’ continuing professional development*

One could argue that I was “bifurcating content and teaching processes” in my 1995 case study and that I was, at most, engaging in “an act of scholarly convenience and simplification in the research” (Shulman, 1987a, p. 6). However, in my 1995 case study (as in my 1994 case study - chemistry), I felt it was important that teaching/learning communicative activities had the potential for transferability (Lincoln and Guba, 1985, p. 297) to other subject areas apart from mathematics and chemistry and that teachers or lecturers who read my work might engage with their own students in collaboratively eliciting/creating and evaluating teaching/learning communicative activities which the

students felt could be lived out more fully in a particular subject with a view to helping the students to improve their understandings.

### *Closure*

In short, I contend that (i) the question, "*How can I help you to improve your learning?*" (Laidlaw and Whitehead, 1995, p. 2), is a question worth asking for the sake of the students in our care and that (ii) sixth form students can help us to answer such a deceptively simple question. My way has been to democratically involve the sixth form students in eliciting and evaluating<sup>7</sup> changes in my teaching practice which the majority of the students felt were beneficial to their learning. Therein lies the potential for "What's in my work for others?".

<sup>1</sup> Following the work of Jack Whitehead of the University of Bath, a central “unit of appraisal” in my research is my claim to know my own educational development for my enquiry.

<sup>2</sup> Using Popper’s views on the method of scientific discovery (Whitehead, 1985 in Whitehead, 1993, p. 57) but significantly transformed by Whitehead’s notion of *living contradiction* and the primacy of ‘I’ as an active agent of consciousness. It is worth noting the emphasis here on both action and consciousness.

<sup>3</sup> Mathematics lessons were videoed on February 2nd, 1995 and on March 30th, 1995.

<sup>4</sup> In a questionnaire at the end of the 1995 project, I asked the 23 Leaving Certificate Higher Level Mathematics students to rate the change in their learning (helped by my changing practice) under the heading “understanding of mathematics”. The rating scale after table 1 was used. Twenty students gave a rating of 1 or more and thirteen students gave a rating of 2 or more. The overall mean value for “understanding of mathematics” was 1.95 and Kenneth is commenting on this figure here.

<sup>5</sup> Outcomes as “ends”. However, in my research, there is also a sense of outcomes as “process”, where democratic values lived out more fully over time constitute both “means” and “ends”. Such a philosophical notion can be traced to Aristotle (Elliott, 1989, p. 93).

<sup>6</sup> The duration of data collection was January 12th, 1995 - May 22nd, 1995.

<sup>7</sup> Involvement of students in the two processes is important and is clearly a democratic and democratising enterprise.

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